

EARTH DOCTORS—FRIENDS OR FOES? ▶ SHRIMP THAT HEAL
▶ GREEN NAZIS? ▶ CREATIVE COWS ▶ RESURRECTION ECOLOGY ▶ FAKING NATURE ▶ TOP RESTORATION TOOLS

Whole Earth

Access to Tools, Ideas, and Practices Spring 2001

Healing Earth

Pete Seeger—Birth of Folk Music
The New New Economy

**embracing the
salmon's return**

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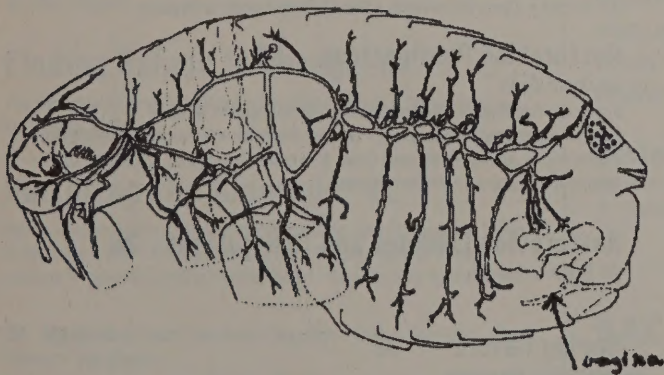


The Vagina of the Mole Flea

a Gift Photo and Essay from the Hon. Dame Miriam Rothschild DBE, FRS

It's a new world! Once you are hooked on the microscope, life can never be long enough. There is a curious inescapable attraction, for instance, in the graceful movement of the unicellular organisms found in a cow's rumen, or a stained section of the intestinal lining of mouse or man under a strong lens—looking like a raging forest fire—or the crystals shimmering in the defensive spray of a desert locust.

The inside cover illustrates a thin section through the abdomen and vagina of a mole flea, killed by chloroform fumes, embedded in wax, and cut into a ribbon of very thin slices—like cutting a sausage—and placed on a glass slide. These semi-transparent slices were passed through a series of alcohols, a wax solvent, and fluid dyes (purple, blue, red, green, and so forth). The different kinds of tissues, characteristic of nerves, muscles, blood cells, fat body, tendons, etc. then take up the colors in a specific fashion. With the aid of a high-powered lens the search for disease-carrying bacteria can now begin. Does the mole flea, like the rat flea, spread bubonic plague? Even if no bacteria are discovered, and the search is fruitless, the pattern and graceful curves of the sectioned walls of the vagina and various internal organs remain in your memory like a magic maze.



< An eminent American entomologist described the flea's penis as the most complicated sexual organ in the animal kingdom. Small wonder that a section of the female abdomen and vagina reveals a wonderful pattern of curves, flexures, arches, sweeps, hairpin bends, hollows, ellipses, crooked spaces, rolls, tunnels, crypts, and so forth. The different tissues are revealed by different stains. No scientist claims to know how flea pairing really works.

The red blobs are sections of the hindgut. The wavy blue lines are a cross section of the complex vaginal tube. The mole flea is relatively huge. — 4MM = ACTUAL LENGTH OF FLEA

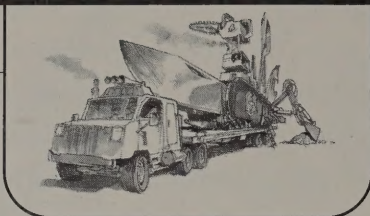
The Oxford dictionary defines "systematics" as the branch of biology that deals with the interrelation of different species and their classification. Today this study is rather out of fashion, dated perhaps, a Victorian hobby? But it is in fact exceedingly important. Is the mole flea a carrier of a fatal disease, or the gnat on the ceiling of your bedroom the vector of malaria? Only the systematist can supply you with the correct answer, which may well be a matter of life or death. The determination of an insect species can sometimes involve a tedious count of bristles, or a measurement of the curves and shape of male claspers, but it also leads us into a dream of color and form. Today black holes and the expanding universe stimulate and excite the twenty-first-century scientist, for we can now reach for the stars....But the systematist enjoys a curious sort of daily secretive pleasure, of curiosity always renewed, of satisfaction and of wonder—the jump of the flea, the return of the swallow, the small gilded fly—the natural world today.

Miriam Rothschild

The Honorable Dame Miriam Rothschild DBE, FRS sent us this intricate modern painting, which turned out to be a micro-photograph of a mole flea vagina. She confirms the high esteem I have always had for her scientific work and sensibilities. Her affections include fleas, butterflies, intestinal worms, flies, moths, marine snails, mites, mammals, birds, and, last but far from least, flowering plants. She recently published a book on 184 nature reserves in the United Kingdom. She has followed their ecological whimsies for fifty years! At Elsfield Manor she keeps large gardens as a refuge for critters large and small. As you can tell, she is a fine craftswoman of English prose. My favorite book, *Fleas, Flukes, and Cuckoos: A Study of Bird Parasites*, is currently out of print. She has worked to conserve and restore many "middle landscapes" like hay fields, hedgerows, dew ponds, and countryside streams. —PW

(For non-Brit readers, DBE stands for Dame Commander of the Order of the British Empire. FRS is not Federal Reserve System, but Fellow of the Royal Society.)

FEATURES



The Vagina of a Mole Flea

by Hon. Miriam Rothschild 1

Letters to the Editor 4

The New New Economy 8

by Joel Makower and Ron Pernick

Longtime Passing 19

An Interview with Pete Seeger
by David Kupfer

Margaret Mead Awards 86

City at Peace • Homeless Prenatal Program • Camp AVARY

All Species Project 90

by Chris Wells

The Hawk That Wouldn't Migrate

by Elizabeth Rouan 92

"She Taps on the Roof, She Does a Little Dance" 93

by Allen Fish

Books, Stuff, and Resources

9 Clean-Tech Web sites

10 Fine Catalogs

Facets Movie Lovers Video Guide • Facets Video Master Catalog • The Whole Toon Catalog • Child of the World (Essential Montessori) • John Holt's Bookstore • Monte Package Company • Non-Electric Catalog • The Astronomical Society of the Pacific

12 Ha Ha Web Sites

13 Restop Lavatory Products • Shitting Pretty

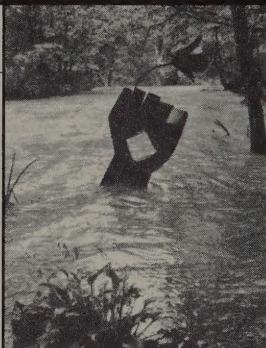
14 The Sibley Guide to Birds • Birds of a Feather

15 The Legacy of Luna

16 Origins of Democratic Culture • Democracy in the Digital Age • The Social Life of Information • Cyberselfish

18 The Garland Encyclopedia of World Music

22 Folk Music Access: Where Have All the Flowers Gone (CD) • The Hudson River Sloop Clearwater, Inc. • Where Have All the Flowers Gone (book) • Pete Seeger's Storytelling Book • Hard Hitting Songs for Hard-Hit People • The Best of Broadside 1962-1968 • Giants of the Folk Tradition • Great Folk Labels • Folk Song Essentials • Anthology of American Folk Music • Sing Out!



The expanding restoration spirit, thousands of volunteers, and years of committed service have a new-found power. Place making has entered the mainstream and some mainstream constituencies have rebelled. Who cares if landscapes are all dandelions and lawn? Why do restorers get to create their version of nature? Place making and culture shaping entangle.

A ten-year update on restoring nature to neighborhoods, watersheds, and intercontinental migration routes. A world of rich ambiguity. What's possible? practical? sustainable?

Intro to Place Making 24

Fun and Comfort in the Field 30

30 Thermo-Cool Headband • Insect Repellent • Ponchos • Vector Computer/Watch • Bruno Sherpa • Solar/Lunar Watch • Hand Cleaner • Anti-tick Tools • Cargo Bars • The Earth Manual

31 Restoration Catalogs: Peaceful Valley • Ben Meadows • Forestry Suppliers • Terra Tech, Inc.

32 In Service of the Wild • Green Phoenix

33 Mapping/Weather Tools: Topozone • Terrain Navigator and Professional • GIS access • Davis Instruments • The SkyScan Lightning Detector

Restoration Publications 34

by David Egan

Ecological Restoration • Restoration Ecology • Land and Water • Reforesting Scotland • Aquaphyte • Greener Roadside • Restoration • Wild Earth • Prairie Plains Journal • California Coast & Ocean • Endangered Species UPDATE • Natural Areas Journal • Wildland Weeds

Restoration Colleges and Institutions 36

by Brian Lavendel

Seeing Nature 38

by Donella Meadows

Green Nazis? 40

by Peter Warshall

Critics—from pop AM announcers to high-IQ academics—are attacking restorationists and conservationists for being too powerful and promoting nativism and anti-immigration.

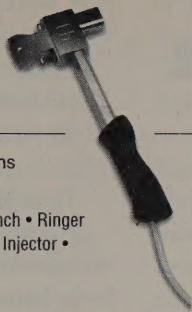


Multistate, Multinational Natives 43

Removing the Unwanted 44

Life Out of Bounds • The Ecology of Invasions by Animals and Plants • Invasive Plants

Invasive Plants Tools: Root Jack • Weed Wrench • Ringer Tree Girdler • E-Z-Ject Lance • Hypo-Hatchet Tree Injector • Herbicides



Cat Fights 46

Deer Repellents 47

Chicago Controversy 48

by Alf Siewers

Idealistic restorationists tried to return forest to savanna, But animal rights groups, upscale neighborhoods, and the media organized an end to restoration. How to make acceptable ecological change a community decision.

53 Restoring Nature • The Tallgrass Restoration Handbook • Miracle Under the Oaks

Wilderness and the Hyperreal 54

by Peter Warshall

Is faking nature preserving it? Ask the Old Man of the Mountain.

Ranching Back To Nature: a Photo Essay on Creative Cows 56

by Dan Dagget

Finding Refuge in Change 60

The Historical Ecology Handbook • Eco-History Tools • Yellowstone and the Biology of Time

Nurturing the Wanted 62

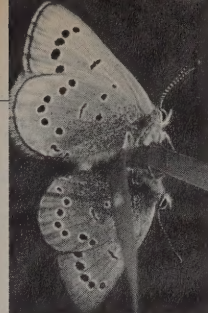
Plants from Test Tubes • Collecting, Processing, and Germinating Seeds of Wildland Plants • Practical Woody Plant Propagation for Nursery Growers • Forward-Looking Infrared Radar • Remote Data Systems, Inc.

63 Machinery: Seed Collectors • Shuckers • Drills • Spreaders • Rock Pickers • Tree Spades

64 Trees: Treessentials • TreePro • Treegators • Drivwater • The Once and Future Forest • TreePeople • Second Nature • Tools, Trees and Transformation • Restoration Forestry • Alaska Environmental Contracting • TreeToad

Stopping the Leaks 66

Bioengineering materials: Bitterroot Restoration, Inc. • Nedra Enterprises, Inc., • California Straw Works • eojute Erosion Control Fabric • TurfTacs, Steel Staples, and Turf Tacker • **Mycorrhizal Inoculum and Soil Amendments:** Fungi Perfecti • Restoration Technologies Intl. • AgBio, Inc. • GroLife • **Journals:** Biocycle



Wetland News 67

Wetlands • Restoring Streams in Cities • A Restoring of an Urban Salt Marsh • The Everglades • Environmental Concerns, Inc. • Wetland Journal • Restoring the Nation's Marine Environment

Resurrection Ecology 68

by Robert Michael Pyle

Can we bring species back from extinction?

Reintroducing the Lost 70

Mammoth • Quagga • Guar • Buccardo • Thylacine

Nice Boulders, Where's the Fish 71

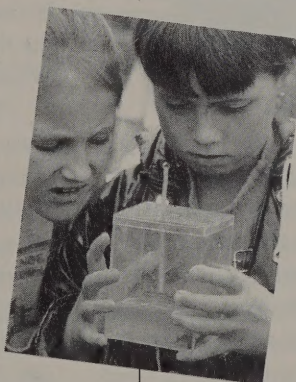
by Seth Zuckerman

A ten-year update of what's happening to watershed restoration and the return of the salmon. Paradoxes and paradises.

74 Totem Salmon • Salmon Nation

Completing the Tapestry 76

Brooklyn Botanic Garden 21st Century Gardening Series • Building Homes for Bats • Landscaping for Wildlife books



Solving for Pattern: The Straw Project 77

by Michael K. Stone

Fourth-graders' interests in a shrimp weave a web of restorationists—ranchers,

teachers, private consultants, principals, Congressional aides, parents, government employees, birders, and philanthropists. Our major story on the blossoming of positive restoration works into community life.

Restore Balance, Not the Past 84

an interview with Ray Dasmann
by David Kupfer

BACKMATTER

Gossip 96

Book Brawl, Take 6 96

WELL Discussion: *Whole Earth's* Image 98

Thanks • Donors 100

Maniacals 101



Whole Earth

SPRING: 2001

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SUBSCRIPTIONS: In US \$24; in Canada \$32 (includes postage and GST); elsewhere \$39 (US funds). For customer service, write *Whole Earth*, PO Box 3000, Denville, NJ 07834-3000, or call 888/732-6739.

Whole Earth (ISSN 0749-5056) is published quarterly by Point Foundation, a nonprofit educational organization, 1408 Mission Avenue, San Rafael, CA 94901-1971 (415/256-2800). Periodicals postage paid at San Rafael, CA and additional mailing offices. POSTMASTER: send address changes to *Whole Earth*, PO Box 3000, Denville, NJ 07834-3000. Copyright © 2001 by Point. Printed in USA.

We thank the Marin Community Foundation for its generous support of this issue.

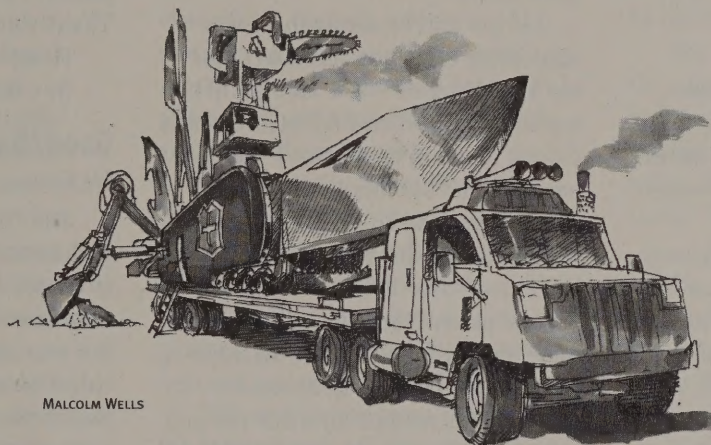
www.wholeearth.com

Next are the *Whole Earth* short product descriptions, with their breezy J. Peterman confidence. Mr. Kelly writes, "making confident claims like this is hard, time-consuming, and expensive. It's not done casually, although we try hard to make it appear so." Why would you do that? Doing so represents an inherent lie that is closer to advertising than good product evaluation. Trying hard to make it appear so is nothing Mr. Kelly invented; it goes back to the beginning of *Whole Earth*. I remember, though, that in early catalogs and early versions of the magazine, you would publish contributor guidelines suggesting that the correspondent pretend to be describing a product in a letter to a friend. That's good advice, but if I were writing a letter to a friend, I would not affect an aura of hip, casual confidence. I need hard data, not hip fluff. What's interesting is that this dishonesty appears much more frequently in staff reviews than in letters from the readership. Contrast, for example Joel Garreau's earnest and fun description of the Skiller's Duckweave Pants with, say, Stewart Brand's too-cool-by-far description of his \$3,400 IWC Fliegerchronograph watch.

Which leads me to my third issue, *Whole Earth's* tendency toward consumer pornography. I remember when I encountered *Playboy* as an adolescent. Among the several things that amazed me were the standard spreads of lovingly photographed high-end cars and stereo systems. I remember being puzzled why these items were featured in the magazine, since they were obviously beyond the reach of the working stiff's who bought it. I did not realize until long after that the consumer spreads were designed to invoke fantasies in much the same way as the large-breasted young women.

Whole Earth has long had a minor element of consumer porn. If the early yuppies were ex-hippies with expensive

playthings, one might argue that many of them first discovered the pleasures of high-end toys without guilt in the *Catalog*. That element goes out of control in Mr. Kelly's minicatalog. The only reason I can think of for moving from a \$40 Swatch to a \$3,400 Fliegerchronograph is over-the-top self-indulgence. If Mr. Brand's Swatch was keeping his wife awake, why not take it off and put it in a drawer for the night? Or switch to a quieter cheapie. Taken as a whole, the issue presents Mr. Brand



as a self-absorbed toy addict, wandering around the world wearing his \$3,400 Fliegerchronograph, dragging a \$200 Travelpro Rollaboard, with \$250 Danner boots on his feet, a \$70 Seal Pup knife (interesting name for a knife) on his belt alongside a pouch with his \$60 Swiss Army Champ knife, the \$995 Leica Trinovid binoculars around his neck, along with his \$1,000 Olympus C-2500L camera, a \$50 Tilley hat on his head, his pockets stuffed with a case of Power Bars and a \$50 Oregon Scientific travel clock, a \$574 Garmin GPS, a \$399 Thommen altimeter, the \$160 Kestrel 3000 Pocket Weather Meter, and the three \$10 Brunton Classic compasses. Not to mention the two pairs of \$200 Mephisto shoes and the Nike Air Mocs. Not counting the Nikes and the Power Bars, that's \$7,638 worth of toys on one man. And that does not include the \$680 Garmin StreetGuide that Mr. Brand expects to get for his car.

I love to hear about good tools and ideas, but not consumer porn. I have nothing against toys; they play a vital

role in human life. But what ever happened to voluntary simplicity and living lightly on the earth? With plugs like this, *Whole Earth* veers dangerously close to becoming a New Age Sharper Image. Which leads me to my last point, an old *Whole Earth* tendency toward foolish inconsistency. Under "Book Brawl," you write, "It was mega-store/online promotional advertising that closed most independents...." and then you go on to say "*Whole Earth's* staff, not overly impressed by

Amazon.com...." Here you have a company with which you are not impressed, a company whose huge advertising push hurt the independents, and what do you do? You or Mr. Kelly give them free promotions throughout the magazine, in the form of "From, for example, Amazon." Why do that? Is Amazon the only place to go for these

products? If not, don't give them a plug. They certainly don't need it, and you are not doing your readers a favor sending them to a company with which you are not overly impressed. [See page 96 for "Book Brawl 6." —Ed.]

Similarly, I enjoyed Mr. Kelly's tour of Home Depot with J. Baldwin. But why are you encouraging your readers to shop at Home Depot by supplying store part numbers? I'm not necessarily against bigness or chains; I was truly bummed when the venerable local Tower Books store closed the other week, victim to corporate restructuring. Frankly, I have not investigated the case for or against Home Depot, but besides the standard issue of mom/pop stores against Goliath, I dislike Home Depot because they build their megastores in the back of beyond. You can't drop around for a spare two-by-four or replace a broken drill bit without driving, and the quick errand becomes a freeway nightmare. You do not need to supply Home Depot's part numbers; your readers are are smart enough to

figure out where to get these things.

I repeat that I think you are all doing a fine job, on the whole. I am pleased that you have new voices like Emily Polk. Her comments about Nike were excellent. With her reservations, she lifts *Whole Earth* out of a traditional situation where something is listed because it is cool and useful, with little thought as to where it comes from. I'd like to see more of that self-awareness.

Regards,
John Boylan
By e-mail

• • •

To the Editor,

The *Whole Earth Catalog*, *Whole Earth* and *CoEvolution* opened my mind and heart to so many great alternatives to the unsustainable dominant themes of our Western culture.

I have not always agreed with everything you have printed but you have always pushed me to question and expand. I am thankful for what you have shown me about watersheds, other cultures, ethnobotany, natural healing, renewable energy, spirituality, and so much more.

I was surprised by a number of the recommended tools in issue 103.

[Here, Mr. Laurie mentions many of the same reviews as John Boylan. We cut for space. —Ed.]

In a world that is rapidly coming apart at the seams largely because we all buy and consume too much stuff, are these expensive toys appropriate recommendations?

Michael Laurie
Resource Efficiency Consultant and
Herbalist
Vashon, Washington

WOW! and....

Dear Editor,

Thanks for the Winter issue; it was great. My measure of how interesting a magazine is comes from how many page corners I turn down to revisit (reread, recommend, research, etc.). This issue had a lot of pages worth a second visit. A couple comments:

- The Fidelity Charitable Gift Fund

is not the only game in town. We found Fidelity hard to approach, settled on Heartland Charitable Trust in Dubuque, and have been very happy with them. Please report on others some time.

• Please thank Peter Warshall for being willing to publish Kevin's review of Nike products AND for critiquing Kevin's choice to do business with Nike.

Mike Morton
By e-mail

• • •

Wow. I just adore the Winter 2000 issue.

Let me start by saying that I was born in the early '70s and didn't have any knowledge of *Whole Earth* until I was in college, when I fell in love with a *Catalog* found in the library. I was desperate to find out more. My parents thought they had an old *Catalog* somewhere. We couldn't find it. I found a few in local used bookstores and on friends' parents' bookshelves. I craved more. Finally found those I was missing on eBay (by the way, Alexander Rose, eBay is not just for machines and collectors—I've found items I couldn't find anywhere else—and I prefer to buy from individuals if I can't find something locally.)

I've subscribed to and bought *Whole Earth* for about eight years now. I like to support it and it generally has something new for me to think about, but I've desired something that reflects those earlier *Catalogs*—those that predated me. It seems that most of the tools that are featured these days are books and scientific gadgets. I like all kinds of tools, and have many more books than I will probably ever read as it is. I am interested in environmental issues, but it's probably not my greatest passion. Maybe this makes me a less-than-ideal *Whole Earth* reader, but I yam what I yam.

This issue rocks (almost entirely). I'm inspired by the outstanding documentaries list (many of my favorites are there—might send in some that I didn't see). It feels like the old *Catalogs* that I lovingly explore every so often. Hurrah! I want more of these!

A couple of minor quibbles—I also like to buy from smaller business when I can—why so many references to Amazon.com? (Even the “for example” qualification doesn't help me get over this one.) I would expect better from such a knowledgeable publication....[For more on Amazon, see page 96. —Ed.] Since you already had a mention in the issue about the Nike problem, I'll bite my tongue on that one.

All in all, I'm delighted. Inspired. If I had more money I'd certainly donate just on the basis of this issue. I mean it. Thank you thank you thank you.

Hilary Hitchcock
By e-mail

Good/Bad/Good/Bad

Hi Kevin,

The “Tools” issue was as good as the past issue [on “All Species”] was bad. It is a work of art! I've felt on the verge of not renewing my subscription to *WE*, but your issue reminded me of its potential. I've read the magazine for over twenty years, I have all the issues. This is not just an emotional reaction: *WE* has been sucking; not fun to read, not funny. The glossiness that has crept in is offensive and irrelevant. This used to be the best magazine in the world. It must not go down the tubes!!!!!!

Respectfully yours,
Sam Bartlett
By e-mail

[Kevin responded to Sam:

Dear Sam,

I don't share your belief. The reason I devoted a lot of time to producing the special issue which you enjoyed (thanks for the compliment) is that I think *Whole Earth* is still the most interesting magazine around. It is not the *Nation*, it's not *Fast Company*. I like magazines that constantly reinvent themselves, and if anything, I hope my issue shows that there is a huge space of possibilities that *Whole Earth* can explore. Having guest editors is one way to explore it. In any case, I am delighted you found the issue relevant and worthy.]

• • •

Dear Peter,

As usual during one of my transcontinental moves, I missed one issue of *WE*—Fall 2000—so was very pleased to finally receive the Winter 2000 edition. The cover was truly revolting; I'm sure it was meant to be in the spirit of the one with the head of fruits and flowers, but didn't succeed.

After reading J. Baldwin's ramble through Home Depot I gave up. I put it aside for a few days, wondering why I was so angry, and seriously debating not renewing my subscription. Even if I don't appreciate an issue or get left behind by the movement of ideas, I always pass it on to Peace Corps Volunteers (PCVs), who universally appreciate it. I too learned to cruise Home Depot during my last three years back in shopping land (and they buy some of our certified wood from our forestry project) but I wouldn't buy any of that stuff that so appealed to Baldwin (well, maybe mini Vise-Grips).

I think the lens of gender editing needs to be used a little more often! The final blow was when I went to my Cabela's catalog to order the mocs so praised by Stewart, and there it was: FOR MEN ONLY.

I went up to my special space to craft a note to you with the magazine in hand and then found the review of the chicken books, the interview with Maya Lin, and the Penzeys Spices catalog, etc. I'm hanging in there after all, a twenty+ year subscriber, enjoying life and *WE* at 11,000 ft., and sharing it with PCVs.

Greetings,
Barbara Belding
By e-mail

Kevin Kelly, Thank You Fate

On a dreary rainy day in the winter of 1987, I was headed to my girlfriend's house when fate steered me into a nearby bookstore. Fate is always doing this to me.... Usually nothing terribly fateful happens, and after I poke around for an hour fate lets me back outside. But on this day I stumbled across an odd magazine with an orange cover: issue 57 of

the *Whole Earth Review*. It was, as it happened, a gemstone. Discoveries like this don't happen very often, but when they do, they make all that aimless browsing worthwhile. Thank you, fate.

...Issue 57, subtitled "Signal," was a special issue about the "proliferation and convergence of communication channels."

Plenty of geekboy fun, with something else besides. Its compact format had a kind of Web-like feel of content and contact information mashed together. I was smitten. I read the whole thing through, every word of it, multiple times. It seemed to be saying something very urgent and very useful about what was happening technically and culturally in the world....

Issue 57 of the *Whole Earth Review*...succeeded in making tech news accessible, subversive, and exciting. And it benefited from superb timing. I think that Kevin Kelly, the editor for issue 57, got it right by talking about the convergence of communication channels.

This was the pregnant period before the Internet took off, back when the World Wide Web was just a twinkle in Tim Berners-Lee's eye. Here are some of the things that were discussed in that one issue:

- *memes and information viruses*
- *fractals*
- *virtual reality*
- *hyperlinking software (Hypercard)*
- *body modification*
- *virtual communities (mostly bulletin boards)*
- *zines*
- *smart drugs*
- *cheap street tech for radio and video.*
- *challenges to copyright law*

It was a dramatic sunburst of information to me at the time; it was a battle cry to participate in something important. I find it impressive that the same list today might serve as a table of contents for any current tech-culture magazine. I still have issue 57, and it's breathtaking how many big trends were spotted early by Kevin Kelly, Howard Rheingold, R.U. Sirius, and company. But "Signal" was just one special issue,

after all, and the next *Whole Earth Review* swung away from information convergence as a pervasive theme.

...Recently fate had propelled me into yet another bookstore, where I saw issue 103 of the *Whole Earth Review*. The theme was "Tools Are Revolution," and it was guest-edited by none other than Kevin Kelly. He's at it again, spotting cultural hotspots like weblogging, the Long Now Foundation and their tireless clock, and his own list of really useful Web sites, tools, and books. Buying the magazine was like meeting an old friend.

But as Kelly himself points out in the editorial for issue 103, the world and the magazine's place in it have changed dramatically in the last ten years. The magazine's still vibrant and useful, but somehow less vital today.

...I can make a Web site and run a weblog. And I can write this by way of expressing myself to whoever is within earshot, and also by way of thanking Kevin Kelly and the good folks at the *Whole Earth Review*. And so I do: thanks.

Ned Gulley

From Ned's "Paracelsus" Web site,
www.starchamber.com/paracelsus/january152001.shtml

Corrections

On p. 59 of the Winter 2000 issue, you erred in the title of *Hearts of Darkness*, as well as the photo from the videocassette. (There is a *Heart of Darkness*, but it's not the film done by Coppola's wife.) Also, it's not spelled "Cuppola."

—From Mike Morton's letter (see page 6)

[Thanks, Mike. The videocassette cover on p. 59 indeed belongs to *Heart of Darkness*, a 1994 film of the Joseph Conrad story. According to Amazon.com, the Coppola *Hearts of Darkness* is not currently available. We did find one on eBay. —Ed.]

The New New Economy

by Joel Makower and Ron Pernick

Joel Makower and Ron Pernick are cofounders of Clean Edge, Inc., based in Oakland, California, which provides market intelligence, publications, and consulting services on clean-technology markets. Joel wrote for our Soul and Money issue (Spring 1998). Ron just joined the board of Point, *Whole Earth's* publisher.

For all the hype about the New Economy—the irrationally exuberant e-world that is now getting its comeuppance—a real, and sustainable, new new economy is emerging. It is based not on ephemeral (and dubious) products and services, but on providing clean energy, clean transportation, clean water, and other goods and services that embody the principles of industrial ecology, resource productivity, and natural capitalism.

This is no mere recasting of the seventies' Appropriate Technology movement so familiar to the *Whole Earth* community. The new clean-tech era is represented by a diverse and dispersed corps of companies, from start-ups to multinational giants, with support from forward-thinking investors, researchers, politicians, and customers. A recent sampling:

- Solar photovoltaics are on track to become the fastest-growing source of electricity generation in the US. Experts predict photovoltaics will grow by nearly 20 percent a year for the next two decades, though some believe that's conservative.
- Wind power is growing even faster, with Germany leading the way, outstripping the world's next-largest producer, the US, almost threefold. But the US is poised to regain the lead, according to Dresdner Kleinwort Wasserstein investment bank, which predicts that, worldwide, wind energy generation will rise more than tenfold between now and 2010.
- Governments are committing to renewable energy. The European Union wants a fifth of all electricity to come from renewables by 2010. Japan produced 80 megawatts of new solar power generating capacity last year—enough to power 80,000 average US homes, or more than 130,000 Japanese households. Japan is now the world's leading producer of photovoltaic cells. Multilateral organizations are making significant commitments to renewables and other clean technologies in the developing world.
- Iceland, which already produces all of its heating and electricity from geothermal and hydroelectric plants, aims to become the world's first hydrogen-based economy, the test bed for

a new generation of vehicles and buildings run on fuel cells powered by an element as plentiful as water. It's goal: eliminate petroleum use by 2030.

- The list of clean-vehicle initiatives is breathtaking, as the oil and automotive sectors at last embrace the future. Clean tech, like politics, can make for strange bedfellows. For example, General Motors and Toyota are teaming with ExxonMobil to produce a clean hydrocarbon fuel in the short to medium term. Meanwhile, everyone from Buick to BMW is touting their upcoming hybrid or fuel-cell vehicles, putting a dozen or more smaller firms making clean-tech engine components squarely in investors' sights.
- Ensuring adequate supplies of clean water has become big business. Biological purification systems, once the domain of alternative lifestyles, can be found adjacent to factories and inside cities. US water recycling and reuse is projected to quadruple by 2020, according to Group Triton, a water-industry analyst. Orange County, California, is building the world's largest water-reuse plant to maintain a sustainable water supply for its growing population. Last year, amid a depressing market, water stocks handily outperformed the Nasdaq and S&P indices.
- Companies and investors now pour millions into "green chemistry," products and processes that are increasingly benign from the standpoint of stock efficiencies, energy use, human health, and the environment. Biobased products, from carpets to car parts, produced from agricultural wastes and other carbohydrate-based materials have become mainstream. A market study by Kline & Co. forecast an annual 15- to 25-percent increase in demand for agricultural fibers in automotive applications—from vegetable-based engine oils to flax straw used in dashboards—and annual increases of 60 percent in building products from construction panels made of sugar cane residue to ceiling panels made of strawboard. McDonald's is investing McMillions in a sandwich container made from limestone, potato starch, and cellulose.

It's important to understand that many of these technologies have huge hurdles to clear before they become profitable, mainstream businesses. Hydrogen takes electricity to produce, not to mention distribute, making it far from benign. Many renewable-energy technologies remain uncompetitive with fossil fuels, due to huge government subsidies for the latter. But even that's changing: in California's sky-high energy market, wind energy is now cost-competitive with oil and coal.

The contrast between the new new economy of clean tech and the "old" New Economy couldn't be greater. The Internet economy is fickle and maybe ephemeral. Billions have been spent trying to invent products for which there is little proven demand. On the other hand, most clean-tech applications address markets for existing and essential goods and services—including morally pressing problems as diverse as climate change and infant mortality. Unlike the Net, which was largely US-centric during its development and early boom, the clean-tech marketplace is truly global. Clean-tech markets for many goods and services have developed first in the Third World, where they can help fast-growing economies leapfrog old-paradigm, polluting technologies.

All told, it's a longer-term business opportunity whose potential is far greater than the Internet's. The greatest business opportunity on the planet today may be how to provide clean water, energy, and transportation to the nearly four billion people—more than half the planet—who earn on average less than \$1,500 a year and who lack basic necessities. Silicon Valley venture capital magnate John Doerr has dubbed clean water, transportation, and energy "the big markets of the future."

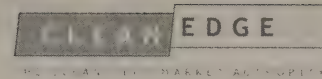
Much like the e-biz revolution, there will be winners and losers, and more than a little carnage among companies and entrepreneurs competing for a slice of the clean-tech pie. But there's plenty to suggest that clean technology will engender a more sustainable economic revolution—for business, the planet, and all of its denizens.

For those who wish to invest in clean-tech stocks, they can trade directly on the open market (fuel cell and solar stocks are, by far, the hottest segments right now). They can set up their own basket of clean-tech stocks using a service like foliofn.com or invest in clean-tech mutual funds like New Alternatives Fund (www.newalternativesfund.com). For other Web sites devoted to clean-tech products or investments, see waterinvestments.com, h2fc.com, SolarAccess.com, and evWorld.com.

Clean Edge Access

Clean Edge

www.cleandedge.com



Sometimes our readers sigh as the "alternative" goals they desire actually go mainstream. Organic food, for instance, is a big and booming multinational business. Clean Edge takes the emergent good stuff and adds market intelligence, research services, and strategic consulting services. Want to know if a technology will work? if it's worth investing in? what the competition is? which businesses are involved? Need company news ("GreenVolt Purchases Facility for Alkaline Fuel Cell Unit Production"), or trends ("China Shifts to Gas on Security Fears"), or analysis ("Taking Stock in Fuel Cells")? Their Web site (up and running by end of April) will track clean-tech stock movements and offer a free e-mail newsletter. Their report, "Clean Tech: Profits and Potential," can be downloaded from the Web site. —PW

Select Clean-Tech Web Sites

ENERGY

American Bioenergy Association

www.biomass.org

American Wind Energy Association

www.awea.org

Green Energy News

www.nrglink.com

Green Power Network

www.eren.doe.gov/greenpower/homes.html

Hydrogen and Fuel Cell Investor

www.h2fc.com

Rocky Mountain Institute

www.rmi.org

Solar Access.com

www.solaraccess.com

Sustainable Energy Coalition

www.sustainableenergy.org

TRANSPORTATION

Electric Vehicle Association of the Americas

www.evaa.org

EV World

www.evworld.com

Innovative Transportation Technologies

faculty.washington.edu/jbs/itrans

WATER

Water Environment Federation

www.wef.org

Water Investments.com

www.waterinvestments.com

MANUFACTURING

Bio/Environmentally Degradable Polymer Society

www.bedps.org

Carbohydrate Economy Clearinghouse

www.carbohydrateeconomy.org

Consortium on Green Design and Manufacturing

www.me.berkeley.edu/green/cgdm.html

Green Chemistry Program

www.epa.gov/opptintr/dfe/greenchem

International Cleaner Production Information Clearinghouse

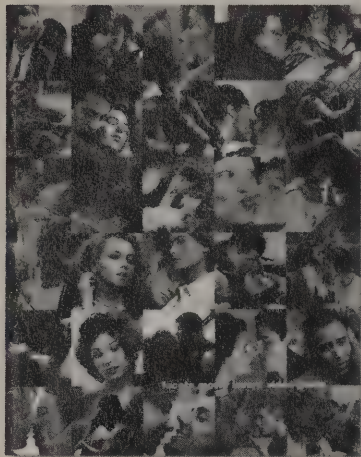
www.emcentre.com/unepweb/index.htm

Zero Waste Research Institute

www.zeri.org

Fine Catalogs

Despite the multimedia ambience surrounding us, hard copy catalogs serve me well. I like the nonlinear browsing (easier in bed or the bathroom), the spread of two pages, the reflective light, and the way they kindle conversation without making me hunch over the screen. These are unique (they, yes, all have Web sites). Any more out there? —PW



Facets Movie Lovers Video Guide Facets Video Master Catalog The Whole Toon Catalog

Video Guide and Whole Toon Catalog free (to US and Canada). Master Catalog \$9.95. Facets Multi-Media
1517 West Fullerton Avenue
Chicago, IL 60614
800/331-6197, www.facets.org

For rent or purchase, the best place to rummage. Features many videos not found at Amazon.com, described in more cinematic summaries. Arranged by sections such as Top Shakespeare Adaptations, Best Documentary Features, Sundance Film Festival Winners, Great American Silents, Great War Films, Directors to Watch, and on and on. You can argue with the catalog, as well as thank it for reminding you of an old favorite.

The hard copy version is not indexed, which sent me to their Web site to look for Latcho Drom, my favorite movie about gypsy music. The Web site is searchable, and I found it there. The purchasable monster Master Catalog of 35,000 video, laser discs, and DVD items is cross-indexed by title, director, and subject matter.



Facets Multi-Media also produces a specialty catalog for animated cartoons (listed alphabetically) with reviews of recommended reading on animation. I just can't imagine living in America and not seeing Fantasia. I just purchased The Simpsons Christmas Special for a friend, but he'll have to wait.

“Twin Peaks Collector's Series. Enjoy all 29 episodes of David Lynch's influential 1990 TV series in this special collector's set. With Kyle MacLachlan, Michael Ontkean, Peggy Lipton, Piper Laurie, Sherilyn Fenn, Lara Flynn Boyle, Billy Zane, Ray Wise and James Marshall. Six volumes, 180 minutes. VHS:\$31510 \$89.98.

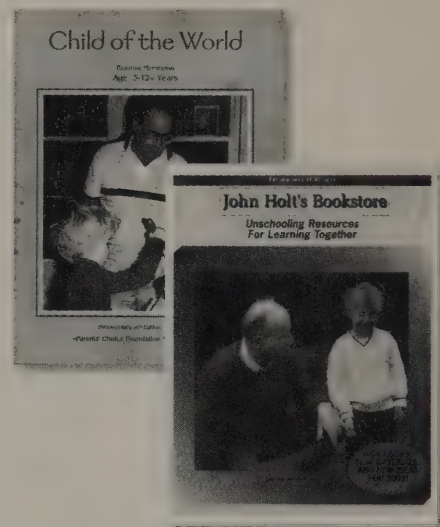
“Strawberry and Chocolate. A sensation from Cuba in which a chance encounter over icecream between a middle-aged gay man and a young, fervent believer in contemporary Cuban Marxism sets the stage for a funny but serious film about difference and acceptance. Their friendship develops despite official intolerance of homosexuality and it soon withstands that shortsighted policy. This film broke box office attendance records in Cuba and achieved world-wide acclaim. Spanish with English subtitles. VHS:\$26613 \$19.95. LD: LD75320 \$39.98. Tomas Gutierrez Alea, Cuba, 1994, 104 mins.

Child of the World Michael Olaf's Essential Montessori for Ages 3-12

\$5 (\$6 postpaid)
Michael Olaf Company
65 Ericson Court #1
Arcata, CA 95521
888/880-9235, 707/826-1557
www.michaelolaf.net

John Holt's Bookstore Unschooling Resources for Learning Together

Free
John Holt's Bookstore
2380 Massachusetts Avenue, Suite 104
Cambridge, MA 02140-1226
888/925-9298, 617/864-3100
www.holtgws.com



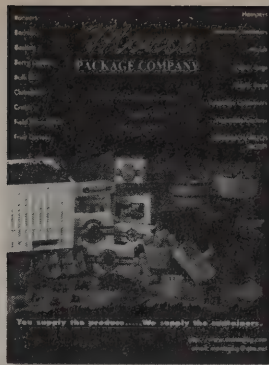
Tired of saturated-primary-colored plastic toys for kids? Everything remote-controlled and sounding like an emergency vehicle with hiccups? Child of the World is the sanctuary. A very politically correct Montessori catalog (“to live in peace with family, the community, and the earth”), but I love the quiet, unobtrusive nature of the toys and games, art materials, instructional books, and posters. Topics include plants, animals, geography, language, math, history, and music. Human imagination remains predominant; the toy never overwhelms the senses. They quote Einstein: “I never teach my pupils; I only attempt to provide the conditions in which they can learn.” Monsters and mayhem have been banished from this kingdom. Beeswax, peg looms, World Bingo, Family Math books, and tools and homeware sized for little men and women are plentiful.

John Holt's Bookstore carries on the “unschooling” legacy of John Holt (How Children Fail, Growing without Schooling), with books, magazines, tapes, and other resources for homeschoolers.

Monte Package Company

Free
3752 Riverside Road
PO Box 126
Riverside, MI 49084
616/849-1722, www.montepkg.com

If you belong to a Community Supported Agriculture group, sell crops at a flea market, want to open a roadside stand, or know of an outlet for the extra fruit from your orchard, this is your catalog. The Monte family is heartland honest. They supply barrels, baskets, berry and vegetable cartons, crates, picking and packing accessories, labels, gift and specialty baskets. They tell you how recyclable any plastic product is, though most of their products are wood and paper. Almost all are bulk sales, though some of the specialty baskets, barrels, and bins can be purchased individually. Most morsels on American dinner plates have traveled 1,300 miles from the soil they were grown in. This packager is one reason they look so good.

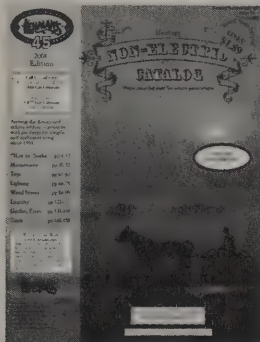


Wood baskets

Non-Electric Catalog

\$3 postpaid
\$7 for three-year subscription (US only)
Lehman Hardware and Appliances, Inc.
One Lehman Circle
PO Box 41
Kidron, OH 44636
888/438-5346, 877/438-5346
www.Lehmans.com

A bit of kitsch creeps in, but this is the best catalog for those elegantly disconnecting from the grid or desirous of retro farm décor. Great wood stoves with catalytic converters to stop pollution. Every style of wick lamp you might desire. Washboards, tortilla makers, grain mills, manual sewing machines, and hand-cranked blenders. Amish-country character throughout. They're straddling the electric/non-electric divide: "Our Web site has even more items than our catalog!"

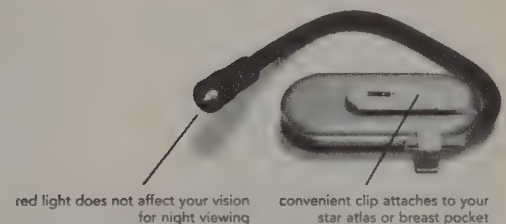


Coffee, tea or a hot shave in minutes



Our Storm Kettle is for those who find it impossible to begin the day without a hot cup of tea or coffee, or for those who's idea of camping does not include shaving with cold water. It has accompanied fishermen, hikers and campers for more than 100 years. Unique design makes the Storm Kettle the focus of attention wherever it is used.

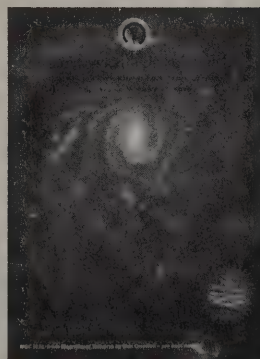
Ingenious, simple design. The hollow kettle, made of double skinned aluminum, surrounds the fire you build in the base. The water absorbs the fire's heat through the aluminum skin in an amazingly efficient manner. Add more fuel through the 2" OD vent on top. Boil 40 oz of water in 3 minutes. Cork on brass chain can be inserted to keep water hot or from splashing out while in transit. 12"H (15"H including base) and 6"OD, 2 1/2 lb. Made in the UK. #77-456; \$99.00



The Astronomical Society of the Pacific

Free
390 Ashton Avenue
San Francisco, CA 94112
800/335-2624, 415/337-2624
www.aspsky.org

The heavens have moved way way out there. Here on Earth, in this solar system, you can buy the Millennium Star Atlas (\$270) with 1 million, 58 thousand stars to visual magnitude 11; a red-light flashlight to help you read star charts or point out a piece of sky without contracting your pupils (\$18), an orrery—ha!—(\$300), spectacular photos from the Hubble, and tapes to use with a Walkman to teach you the stars (\$25). If you love nighttime skies, buy here.



An orrery

Ha Ha Web Sites

We receive very funny e-mails that then get deleted. We wondered if there were Web sites that collected stuff like the faked photo of George W., his nose smothered in coke. We couldn't find great sites cataloging funny wired texts! Any suggestions?

So Emily and Devon, bored with proofreading and counting pennies, sent out e-mails to compadres, commadres, roommates, and assorted psychos, asking them to e-mail back "funny Web sites." They spread the word to their fellow employees and friends. John David Ebert, our super-competent intern, perused the recommended sites, and, if he laughed, passed them on. (He also found a couple of his own.) Some are unintentionally funny and some are gulpers, not gigglers. The only staff conclusion: younger folks liked these choices' humor. —PW

the ONION® www.theonion.com

The winner (most recommended). An "alternative newspaper" with headlines like "Clinton Vaguely Disappointed by Lack of Assassination Attempts," or "Elderly Woman Casually Mentions Wish to Die," or "Developmentally Disabled Burger King Employee Only Competent Worker."

www.go2net.com/useless

Unintentionally funny Web sites randomly chucked together. Sheds new light on Internet use and intelligence. "Modern Moist Towelette Collecting—The Gallery." Or, "Squirrel Fishing?" "Oxymoron Computer Repair."



www.mulletsgalore.com

So, what's a mullet? Retro-environmentalists say it's a stout, edible fish (but young, cool dudes know it's a haircut —PW). Actually more than a haircut. Unlike the fish, it's a life choice. The do goes by many names...

Kentucky waterfall, Canadian passport, ape drape, mud-flap, neckwarmer. This cultural fillet is an acquired taste.

www.Jesus.com

Serious Christians must be furious at whoever beat them to Our Lord's Son's domain name. The sensitive will find www.Jesus.com offensive. Find links to date The Guy, take a shower with God's son, hear His sermons, discover His musical tastes.



www.rubberburner.com

If you crave to be "uplifted," turn to this race car driver's personal site. We can't tell if it's serious.



Dull Men's Club

www.dullmen.com

A site devoted to dull men. (Love shoveling snow? paying the electric bill?) Dull men trivia, jokes, books, links. Not funny. But confirms for Emily why she's not interested in the guys she's met.



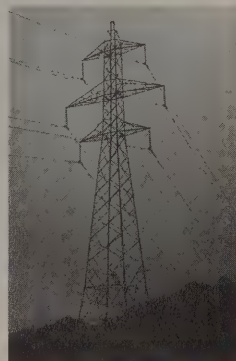
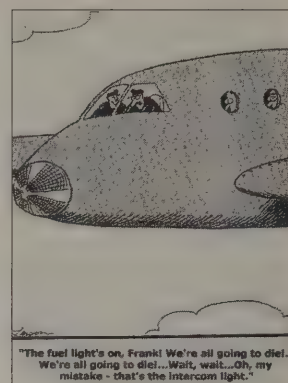
www.dancingpaul.com

This one had all the women in the office rocking out in Devon's office. The most interactive and fun. Paul dances, you choose the dance tune, backdrop (Buddha or city, for example), back-up dance troupe, and the dance moves. Don't be shy to join in with Paul. Try Zap Mama's "Mr. Brown." Unfortunately, it requires all kinds of memory and stuff and may crash megabyte-starved computers.

Welcome to the Home of [Very Funny Pics.com](http://www.veryfunnypics.com)

www.veryfunnypics.com

A smorgasbord of cartoons, photos, and goofy ads. Click on a topic such as "men & women," "kids," "computers," and "food."



www.pylonofthemoth.co.uk/

A pylon is: (A) A steel tower supporting high tension wires? (B) A tower marking a turning point in a race among aircraft? (C) A monumental gateway in the form of a pair of truncated pyramids serving as an entrance to an ancient Egyptian temple? (D) A species of snake? (E) A new Gortex fabric by Patagonia?

It's A, B, and C, but this Web site is exclusively for the millions of steel tower pylon enthusiasts. Specially designed for sensitive landscape architects and city planners, to pay homage to "the humble electricity pylon, whose beauty remains tragically unrecognized."

www.hairyback.com

We heard about this site because EP went to high school with HBK, otherwise known as "Hairy Backed Killah"—the guy who started and runs this site. (She says she was never made privy to his hairy back, nor is she sure if this site was intended to be funny....) Some would consider this politically incorrect, which is just the point.



www.amihot.com

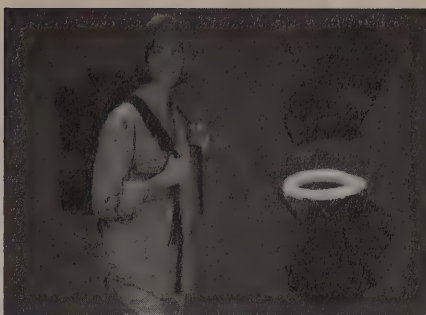
Truly roasting humor. Hundreds of people around the world send in their photos to be rated from one to ten by anybody who clicks onto the site. A perfect ten gets you... NOTHING! A perfect one... the knowledge that everybody thinks you're ugly. Sick.

Restop® Personal Lavatory Products

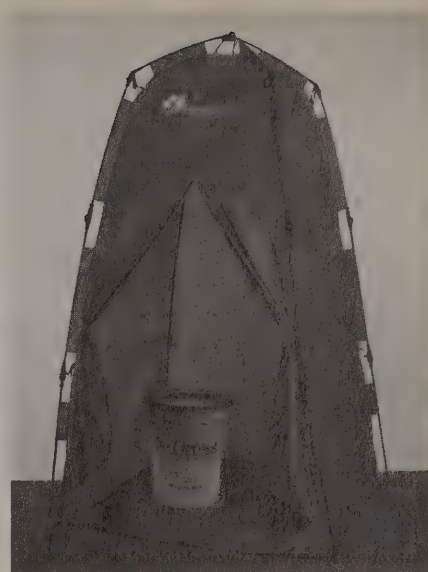
In North Dallas Forty Burt Reynolds prepares for an EST-style seminar (no bathroom breaks) by fitting his pants with a funnel attached to a plastic tube that runs to a can strapped to his leg. What he needed was a Restop disposable bag, which features a bendable funnel opening and contains a blend of polymers and enzymes that turn liquid or solid waste into a deodorized gel almost instantly. Use it, seal it, and drop it in a trash can. In our Whole Earth Laboratories test, I inverted and vigorously shook a filled urine bag, without a drop of leakage.

Pilots and boaters, and backpackers committed to leaving **nothing** but footprints, are obvious users. You can imagine your own uses, like when the kids start yelling to stop ten minutes after you've pulled out of the gas station. Restop would have been a hit in the seventeenth century during those three-hour Puritan sermons.

For privacy, the field lavatory "system" includes a pop-up tent ("the zipper operates from the inside, just in case there are any aspiring comedians around") and a bucket commode with a full-sized foam toilet seat. The Everest Environmental Expedition, which collected and treated a thousand pounds of Restop waste, found the tents sturdy and hassle-free under extreme conditions at 21,000 feet. —MKS



Mike holds his Restop bag (after use) upside down. No leaks!



Restop® Personal Lavatory Products

(Disposable urine bags: pack of four \$7.95; solid-waste bags: \$2.60 each; field lavatory system, including privacy tent, commode, twenty urine bags, and ten solid-waste bags: \$179.99) from Restop Products Division (Escondido, CA)

Available at outdoor recreation or aviators' supply stores; for a retailer near you or to order direct, 888/924-6665, www.WhenNatureCalls.com

Shitting Pretty How to Stay Clean and Healthy While Traveling

A must-have for all travelers who've found themselves bonding instantly with strangers on a chicken bus in a Third World country over the similar psychedelic color of their diarrhea. (Happens to everybody.) This light-hearted book is a quick "oh, so **that's** what I should have done to prevent my guts from pouring out of my ass" read. —EP

Serious and humorous. Shows us how to: eat and drink safely in a foreign country; avoid diarrhea, parasites, and diseases such as malaria, typhoid, and hepatitis; cope with unfamiliar facilities; "go" outside when no facilities are available; manage on long bus rides; outsmart gastrointestinal diseases — the traveler's most common complaint.

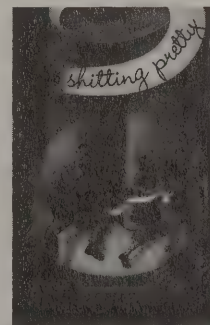
Advice on eating, for example, is straightforward: Eat food that is thoroughly cooked and served very hot, and avoid hard-to-wash raw vegetables, such as lettuce. The author also claims that impure water can certainly make

you sick, but the vast majority of travelers' intestinal symptoms are due to poor food handling practices. —Mike Gaspers

"I don't know if this was true but a diplomat told me this story in 1984. Chap on his way to catch a train in Delhi suffering from diarrhea soiled himself. He dashed into a shop, gesticulated to the assistant that he needed new pants, had them wrapped and rushed to catch the train. He cleaned himself up in the toilet, tossed the soiled pants out of the window, and opened the parcel to find he'd bought a new shirt. —Neal Robbins

"It is crucially important for travelers in less hygienic regions to take special care in washing their hands before eating, and preferably after defecating. It is not always possible to find soap and running water in the place of easement, which is perhaps why door handles of squalid toilets will be hopping with virulent microbes. Whatever washing agent is used, whether it is soap or mud or ash, it is the rubbing process that gets rid of microbes; rinsing with water alone does not produce effective

cleaning. Similarly, campers can scour plates clean with mud, ash, or riverside moss, then rinse and dry them in the sun; this will make them clean enough and safe enough.



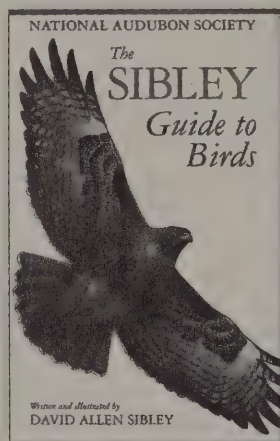
Shitting Pretty How to Stay Clean and Healthy While Traveling

Jane Wilson-Howarth
2000; 147 pp.
\$12.95
Travelers' Tales

The Sibley Guide to Birds

I've reviewed bird guides for thirty years and thought—after Peterson, the Golden Guide, and National Geo—that there was no room for another one. Here comes David Sibley (both illustrator and writer) with a book that replaces all of them. It's the first truly biological field guide to birds, emphasizing the variety of coloring, plumage patterns, ages, sexes, and songs within the same species. By accepting and exuberantly displaying diversity, it is thoroughly bioregional, with the best maps. Each page has pointers and commentary on what variations you might expect to spot and hear, and which birds might perplex you in figuring out their names.

It is too big and fat (6" X 9") to carry around easily, so you will want to keep your National Geo and scribble all of David's pointers in it. My edition printed gull grays too blue and some of the turkey russets too orange, so check out each copy. These are quibbles. The Sibley Guide elevates bird learning to a new intimacy and clarity. You will want/need just one more guide. —PW



The Sibley Guide to Birds

David Sibley. 2000; 544 pp. \$35. Knopf

DARK-EYED JUNCO

This species currently includes at least six recognizable populations. Similar in shape and habits, all nest in coniferous woods and in winter flock together in open woods and brushy clearings.

Dark-eyed Junco

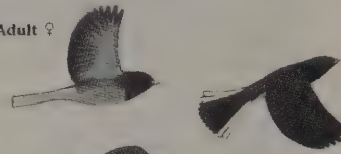
Junco hyemalis

l. 6.25" ws 9.25" wt 0.67 oz (19 g)

OREGON

Marginally the smallest junco. Dark, dull-gray hood contrasts sharply with brown back and flanks.

Adult ♀



1st year ♀



Pale adult ♂



Dark adult ♂



PINK-SIDED

Averages 5 percent larger than Oregon. Clean blue-gray hood (palest on throat) contrasts with blackish lores and extensive pinkish flanks.

Adult



Juvenile (May-Aug)

all populations basically similar



1st year ♀



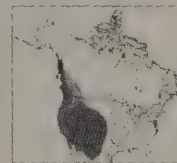
Adult ♂



Voice: Songs of most populations indistinguishable: a short trill averaging slower and more musical than Chipping Sparrow; Slate-colored may average longer song with more rapid tempo and smaller repertoire than Oregon; all populations sing quiet, varied warbling phrases in early spring. Call a very high, hard, smacking *stip*. Flight call a sharp, buzzy *tzee*; also high, tinkling chips when flushed *tsititit tit*. Chase call a series of high, clear *keew* notes.



OREGON



PINK-SIDED

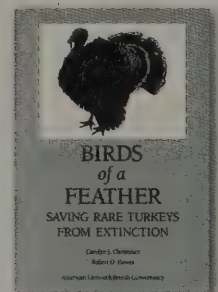


Birds of a Feather Saving Rare Turkeys from Extinction

I love turkeys. Maybe it's male bonding with Benjamin Franklin, who wanted the turkey to be our national bird. Maybe I'm just a North American super bird-patriot. Here is 2,000 years of turkey history from the gorgeous Ocellated to the critically endangered Bourbon Red. Folksy gobbler love. —PW

Birds of a Feather Saving Rare Turkeys from Extinction

Carolyn J. Christman and Robert O. Hawes
1999; 76 pp. \$21.95 (\$25.95 postpaid)
American Livestock Breeds Conservancy, PO Box 477, Pittsboro, NC 27312
919/542-5704, www.albc-usa.org



The Legacy of Luna

Quite possibly one of the greatest love affairs of our time. A 23-year-old preacher's daughter from Arkansas climbed 180 feet into a thousand-year-old redwood tree named Luna in Humboldt County, California, and vowed not to leave until Luna was guaranteed permanent protection from Pacific Lumber/Maxxam Corporation's clearcutting. Julia Butterfly Hill stuck to her vow and lived on a small platform for more than two years, bringing international attention to the destruction of the redwoods and sacralizing the union between one woman and a tree. Here, the eco-heroine tells her love story—surviving smoke from burning napalm, verbal abuse by loggers, a ten-day siege by company security, helicopter attacks, monsoons, frostbite, loneliness. It's poignant, sad, invigorating. Luna and a buffer zone were "saved" for 50,000 bucks (a year later some psycho cut halfway through the tree with a chainsaw). Butterfly's astounding spirit is as resilient as the tree. (If you want to order a tape of one of her best tearjerkers—a speech given at the last Bioneers conference, call 800/647-1110). —EP

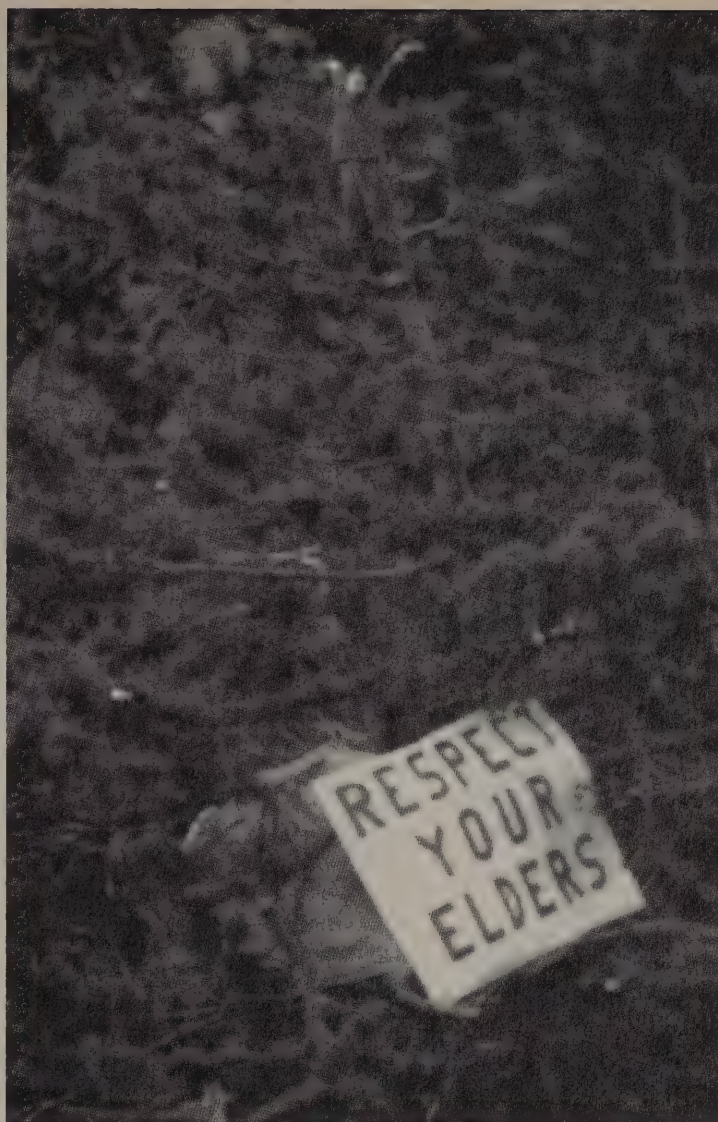
“ I knew that if I continued to debate politics and science—and stayed in the mind instead of the heart and the spirit, it would always be about one side versus the other. We all understand love, however; we all understand respect, we all understand dignity, and we all understand compassion up to a certain point. But how could I convince the loggers to transfer those feelings that they might have for a human being to the forest? And how could I get them to let go of their stereotypes of me? Because in their mind, I was a treehugging, granola eating, dirty, dreadlocked hippie environmentalist. They always managed to say this word with such disgust and disdain!

“ A year and a half in a tree! I found it difficult to believe I was still there. And yet I had lived in Luna so long I could hardly imagine living anywhere else. The tree had become part of me, or I her. I had grown a thick new muscle on the outer sides of my feet from gripping as I climbed and wrapping them around branches. My hands had also become a lot more muscular; their cracks from the weathering of my skin reminded me of Luna's swirling patterns. My fingers were stained brown from the bark and green from the lichen. Bits of Luna had been ground underneath my fingernails, while sap, with its embedded bits of bark and duff, speckled my arms and hands and feet. People even said that I smelled sweet, like a redwood.

Circle of Life Foundation

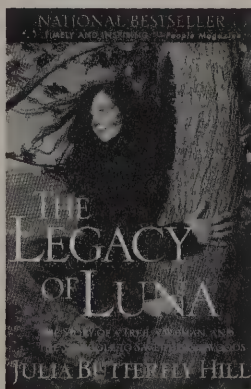
PO Box 1940
Redway, CA 95560
707/923-9522, www.circleoflifefoundation.org

Cofounded by Julia to educate, inspire, network, and activate. Redwood updates. Links to other resources, publications, causes, Julia's calendar.



SHAUN WALKER/OTTERMEDIA.COM

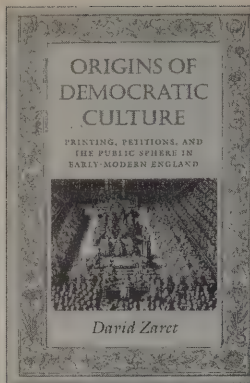
Above: Julia Butterfly Hill stands barefoot 200 feet high in Luna.



SHAUN WALKER/OTTERMEDIA.COM

Julia examining the damage done to Luna after the tree was cut with a chainsaw a few months ago.

The Legacy of Luna
The Story of a Tree, a Woman, and
the Struggle to Save the Redwoods
Julia Butterfly Hill. 2000; 256 pp. \$25.
HarperSanFrancisco



Origins of Democratic Culture

Printing, Petitions, and the Public Sphere in Early-Modern England

David Zaret. 2000; 291 pp. \$45.
Princeton University Press

The history of the public sphere is important because democratic nation-states appear to have been, in large part, an unintended side effect of the culture that emerged in the wake of the printing press. The culture that is emerging in the wake of the Internet is certain to have a strong impact on democracy. Better knowledge of how printed petitions helped lead to constitutions can help us understand how e-mail and Web surfing are likely to affect our fundamental liberties. Zaret's book calls into question several theories of the public sphere that grew out of the work of "Frankfurt School" philosopher Jurgen Habermas. Habermas and others

trace the origins of the public sphere to the salons and writings of Enlightenment philosophers in France and England in the eighteenth century. Zaret offers historical evidence that the public sphere was rooted in the religious petitioning of the common people in the seventeenth century. When sovereigns and other elites in England began to use printing to influence the masses during periods of severe religious and political strife, the masses began to use the same medium to petition the sovereigns. They were begging, not demanding, but it was the beginning of the movement of subjects to become citizens by forming a public opinion that could influence the powers that be.

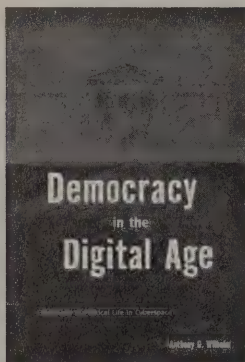
Democracy and communication technology have always coevolved. It's not just about voting. It's about free, informed, and broad discussion. As we look toward the wired world of the future, and ponder the political institutions that might arise, we would do well to study the past, to understand how we got to this point. —Howard Rheingold

“ At the core of democracy's formal philosophies and institutional arrangements lies the elusive idea of public opinion. Assuring the authority of opinion and limiting its volatile excess are principal goals of democracy's institutional arrangements, such as the franchise and constitutional ground rules.

“ If we want empirical evidence on the early public sphere, we must attend to communicative practices by a larger group of speak-

ers, writers, printers, petitioners, publishers, and readers. We must study how individuals talked, argued, sang, wrote, read, and petitioned about public issues, and how this changed, not only in salons and universities, but in alehouses, shops and churchyards.

“ English history is “the model case” for studying developments in political communication that eventuate in the birth of the public sphere. The shift from the norm of secrecy to appeals to public opinion at the level of communicative practice in mid-seventeenth-century England occurred before comparable democratic initiatives in other Western societies. Moreover, these practical innovations provided precedents for democratic ideas in Leveller writings and, later, in writings by Locke and others toward the end of the century. Subsequently, these developments exercised great influence over reflection on politics in the French Enlightenment.



Democracy in the Digital Age

Challenges to Political Life in Cyberspace

Anthony G. Wilhelm. 2000; 184 pp. \$22.99.
Routledge

“Electronic Democracy” was the theme of Whole Earth Review, Summer 1991, an issue I edited. If I could edit the same issue today, I'd include the best of the contemporary critics who see Internet-based communi-

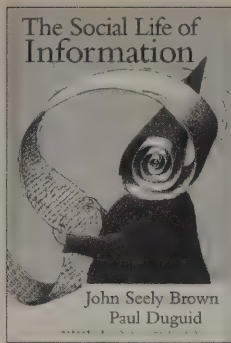
cation as a threat as well as a promise. Foremost among them would have to be Anthony Wilhelm, director of the Communications Policy and Practice program at the Benton Foundation.

There certainly is a strain of naive utopianism associated with the phrase “electronic democracy” today, ten years later, but some of the critics seem as removed from reality as the utopian illusions they criticize. Rare is the critic who is adequately self-critical. Wilhelm argues that online discourse lacks the degree of deliberation and inclusiveness that the word “democracy” requires. He examines his own arguments, and unlike almost every other critic, he cites research data. Of all the verbal scourges I've received over what I wrote in the early 1990s, Wilhelm's was one that sent me back to the literature to do more homework. —HR

“ These four characteristics of the political public sphere—antecedent resources, universal access, deliberation, and design—will

now be explored....When we emerge from this journey, I will provide several remedies for salvaging democracy in the digital age from the threats caused when public-interest values remain in eclipse.

“ Rheingold intimates that perhaps we should remind ourselves that “electronic communication has powerful illusory capabilities” and that one of the the technology's entailments is that we will “forever question the reality of our online culture,” since we are forsaking “true” community for the virtual. However, Rheingold sidesteps the issue of what constitutes reality in a media environment. Taylor and Saarinen (1994) suggest that in the society of the spectacle, “reality is mediaized and thus becomes virtual.” Thus, do not simple oppositions between the true and the apparent, the real and virtual begin to dissolve?



The Social Life of Information

John Seely Brown and Paul Duguid.
2000; 336 pp. \$25.95. Harvard Business School Press

The most memorable parts of this book were the stories about the vinegar-soaked envelopes, the copier repairmen's breakfasts, and John Seely Brown's wars with "the toner-heads." The first story finds coauthor Paul Duguid in an ancient archive, hacking and wheezing from the dust and longing for digitized documents. In walks a medical historian who, to Duguid's utter astonishment and disgust, starts sticking letters under his nose and inhaling deeply. It turns out that when cholera struck in the 1700s, a town's outgoing mail was disinfected with vinegar to prevent

spreading the disease. By sniffing for faint traces of vinegar and noting the date and source of the letters, the researcher was able to chart the progress of cholera outbreaks.

The authors use this story to cast a jaundiced eye at "endism"—technology-driven predictions of the end of everything. Paper, of course, endures—even thrives, with the fax and computer printer—because documents are more than carriers of information. They help shape it, and in the process, help shape its readership. They socialize information.

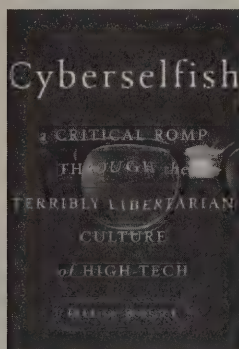
Consider copier repairmen. These are not the lone rangers but intensely social beings who talk shop at breakfast, lunch, over coffee, after work. Why? Their repair manuals are fatally flawed, explaining what to do but not why. The machines are so insanely complex that the reps are forever exploring uncharted territory. So they structure their jobs into social ones and share stories. Finally, there is Xerox PARC's legendary fumbling of the future. In the 1970s its pioneering scientists virtually developed the personal computer, from the mouse to the desktop. Yet, a couple of kids ended up commercializing the technology because Xerox scientists, engineers, and executives just weren't talking. The problem was not one of technology, but of socialization.

When you've finished underlining, dog-earring, and drawing exclamation marks, you find that you've not simply read this book, you've allowed it to change your mind.
— Joel Garreau (courtesy Global Business Network)

“ Strange things happen when a gift economy and a market economy collide.

“ Since the nineteenth century, when the economist Thomas Malthus gloomily predicted that the geometric growth in population would outstrip the arithmetic growth in resources, predictions appear regularly that humanity is on the edge of destroying itself. Most of these predictions take humans to be, like insects, relatively passive in the face of such problems. Whereas, of course, humans are capable of reflecting on such problems and taking collective action against them.

“ From the eleventh century on, the spread of the written word and literacy together allowed “textual communities” to organize themselves. The most distinctive of these were groups of heretics or reformers who organized around new interpretations...developing new ideas of how to live.



Cyberselfish

A Critical Romp Through the Terribly Libertarian Culture of High-Tech

Paulina Borsook. 2000; 276 pp. \$24.
Public Affairs, Perseus

Paulina Borsook took four years to expand a 1996 Mother Jones article into this book. Paulina had been around the evolving high-tech cultures of San Francisco and the Silicon Valley, and she described the technologists she'd met there as “violently lacking in compassion, ravingly anti-government, and tremendously opposed to regulation,” though they were “the inheritors of the greatest government subsidy of technology and expansion in technical education the planet

has ever seen.” The technolibertarians she described were so focused on their tiny entrepreneurial and immensely successful slice of the world that they couldn't see the complex forces that formed the infrastructure for their successes, and they were in danger of biting, gnawing, and ultimately destroying the hand that fed them.

She expressed her perspective on various technolibertarian camps and fascinations including bionomics, cypherpunks, Wired Magazine, and the lack of charitable contributions by the nouveau riche of the cyberculture. Having been there for some of the cybercultural evolution, I found areas where I disagree. (For instance, I think she overstates the impact and influence of the cypherpunks.) But this is an important book, a perspective you won't find elsewhere in the writings and rants of or about the digerati of the early technoculture era that shaped today's Internet. And Borsook's adrenaline prose always makes for a great read.
—Jon Lebkowsky

“ In talking about the connection between computer folks and libertarianism, I don't mean only registered members of the official Libertarian Party....Classic libertarianism com-

bines the traditional conservative right's aversion to government, with regard to laws, entitlements, and services, with the traditional left's insistence on individual liberty. But the ubiquitous free-form libertarianism of high-tech...shape-shifts into all manner of beasts, varying in form from socially conservative belief systems that would do Gary Bauer proud to those that look fondly on anarchy in personal and economic affairs. The Silicon Valley world-view contains within it all different colors of free-market/antiregulation/social Darwinist/aphilanthropic/guerilla/neo-pseudo-biological/atomistic threads.

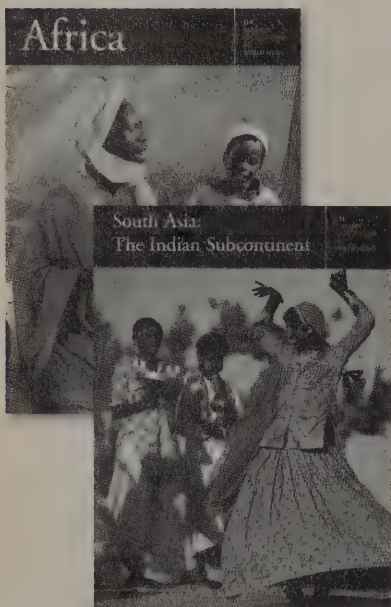
“ If you think about it, PC-based libertarianism can also be reframed as the mind-set of adolescents, with their deep wish for total ram-paging autonomy and desire for simple, call-to-arms passionate politics, where Good and Bad are clearly delineated—taking for granted that someone else does the laundry and stocks the refrigerator....Like ungrateful adolescent offspring of immigrants who have made it in the new country, technolibertarians take for granted the richness of the environment they have flourished in and resent the hell out of the constraints that bind them.

The Garland Encyclopedia of World Music

I am awed by the Garland Encyclopedia of World Music's phenomenal reach. Garland has the goods to achieve its goal of becoming "every scholar's first place to search," but its articulate and accessible style will appeal to audiences much broader than those steeped in ethnomusicology.

Any of the regions it covers could merit multiple volumes. Within one encyclopedia, though, you're not going to find better. It's beautiful to look at, while meeting the challenge of representing the regions' musical complexities. It spans traditional styles to movie and pop music.

These folks know what they are doing. They've made these monster volumes useful by employing reader "guideposts" such as well-constructed headings, offset glossary, and thematic boxes. You don't have to dig through fine print to eke out a concept. Ample white space, used for example to set off song lyrics, gives the authors room to lay out their ideas. Volumes are packed with drawings, photographs, maps, charts, song texts, and ample listings of resource and research tools. Each regional volume comes with an audio CD indexed to the text.



The Garland Encyclopedia of World Music

Volumes currently available: Africa (872 pp.); South America (1,104 pp.); The United States and Canada (1,390 pp.); Southeast Asia (1,050 pp.); South Asia (1,104 pp.); Europe (1,176 pp.); Australia and the Pacific Islands (1,116 pp.). Scheduled for late 2001: East Asia; Middle East; World's Music. \$250 per volume. Garland/Routledge

Look for the Garland Encyclopedia at your library. If they don't have it, ask them to get it. Or treat yourself. The cost may be a reach, but if you have an interest in any region's music, I can't recommend a better buy. —Richard Dorsett

"In the Shona language, no word precisely translates the Western concept of "music." The Shona have separate words for singing (*kuimba*) and for playing an instrument (*kuridza* 'cause to cry out'). Since dancing includes both instruments and songs, the word for dancing (*kutamba* 'play') implies the combination of these three elements.

The Shona describe particularly good musical performances as causing people to run off and allow their cooking pots to boil over. —"MUSIC OF THE SHONA OF ZIMBABWE," IN *AFRICA*

"We do not usually associate such expressive aspects of culture as music and dance with technology, let alone medical technology, but this is exactly how Tumbuka speak of *vimbuza* music. Many *nchimi* and lay Tumbuka relate the music to the batteries in radios: as batteries provide energy for radios to sound, so does music provide the energy for diviner-healers to "see." One produces electricity through chemical reactions, the other produces heat through music and dance. —"TUMBUKA HEALING," IN *AFRICA*

"Other African pop styles have deliberately maintained an indigenous sound through the use of traditional instruments (in an otherwise contemporary instrumental lineup) to appeal to Western audiences whose need for roots reflects their own sense of cultural loss. The growing demand for "authentic" African music by the world-music market has profoundly affected the nature of the production of music.... —"POPULAR MUSIC IN AFRICA," IN *AFRICA*



The Kathak dancer Archana Joglekar holds a dance pose signifying "waiting," with her right-hand gesture indicating "holding a veil."

Harmonics:						
Fundamentals:						
	I	II	II	I	II	I
	Resultant bichords					

Nuclear harmonies in San and south-central Bantu music. From *Africa*.



Mohammad (vocal and harmonium) and Fazl Ahmad (tabla), descendants of court musicians from the Lahore area, Pakistan, performing ghazals at home in the musicians' quarter.

LONG TIME PASSING

AN INTERVIEW WITH PETE SEEGER

by David Kupfer

Pete Seeger is one of the world's quintessential activists, having played such an important role in singing the songs and engaging in the struggles of the civil rights, free speech, human rights, anti-Vietnam War, environmental, peace, anti-nuclear, and social justice movements. He spans musical eras, from those who inspired him, Woody Guthrie and Leadbelly, to those he inspired, Joan Baez, Bob Dylan, Martin Luther King, Bruce Springsteen, and Ani DiFranco. When we sat down next to Mohonk Lake near the Hudson River last September for this interview, he was, at eighty-one, quite humble, straight-backed and clear-blue-eyed, as straightforward, sincere, and real as any living folk music icon might be. He remains opinionated, articulate, keenly aware of his place in history and, thankfully, has maintained his inimitable sense of hope and optimism. —DK

David Kupfer: How would you describe yourself?

Pete Seeger: As a lucky person able to make a living doing what I love to do and especially lucky in having a lifetime partner who put up with my craziness.

My outlook? "There's no hope but maybe I am wrong." People think that I made it up, but it's from Robert Fulghum, author of the book *All I Really Need to Know I Learned in Kindergarten*. He got it from some guy in Seattle about twenty years ago.

DK: What was your first recollection of music?

PS: My mother playing the violin and my father and grandfather playing the piano, classical stuff.

DK: How do you see your role in the origin and evolution of the folk music movement?

PS: I look upon myself as a link in a long chain, and let's hope there are many more links to come. My father took me to a square dance festival in North Carolina when I was sixteen. I heard a five-string banjo played the old-style way and fell in love with it. A few years later I was working for Alan Lomax in the Library of Congress folk song archive, and starting to realize what a wealth of different kinds of music there was in this country that you never heard on the radio. But I think I placed too much faith in the phrase "folk music."

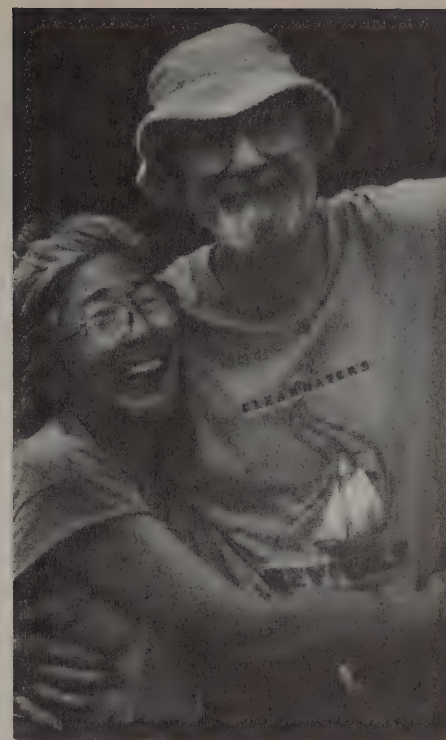
150 years ago the phrase was invented in Germany. "Folk music" was the music of the peasant class, ancient and anonymous. A hundred years ago John Lomax of Texas collected cowboy songs, and called them folk songs, even though he knew who wrote them, and the words were not ancient. Thirty years later his son Alan, who was helping his father lug the 200 pounds of batteries and disc recorders in and out of the car in the early 1930s, said "Father, I want to carry on your work." So at the age of twenty-two, Alan

was installed by his father as Acting Curator of Folk Songs for the Library of Congress. Alan Lomax is the person who I think should be given major credit for what has been called the "Folk Song Revival." My father participated with him because my father was a musicologist and urged trained musicians to learn about "the vernacular." If you lived in the city, the vernacular was jazz. If you lived in the country, it was country music. If you were an ethnic group, be it Spanish or Jewish, it was the music of your personal background, the musical equivalent of the language you spoke. My father urged Alan not to repeat the mistakes of the European folklorists who, a century ago, had collected these peasant songs and then arranged them for part choir and accompanied them on piano, and then told the young people of their country, "Don't change a note, this is our sacred heritage."

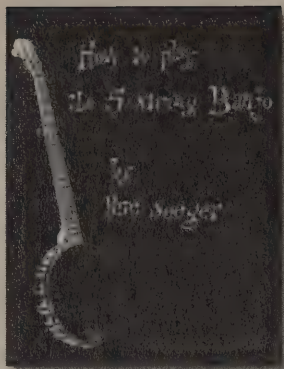
Father said, whether it's a fiddle tune or a gospel song, learn it right off the record from the people who grew up with it. Don't just learn it from a piece of paper.

My mother wanted me to learn how to read music. She'd given fiddles to my two older brothers, but they'd rebelled. I came along and my father said, "Oh, let Peter enjoy himself." What she did was leave musical instruments all around the house. Whistles, marimbas, squeeze boxes, a piano and organ. By age six or seven, I could bang out a simple tune on almost anything. I developed a good ear, so I didn't learn to read music until I taught myself at age eighteen, 'cause I was hearing so many good songs I couldn't possibly remember them all.

I learned by transcribing songs out of the Library of Congress collection in Washington where I was working. I got a job when I just turned twenty in 1939



Pete Seeger and Toshi, his wife of more than half a century.



How to Play the 5-String Banjo

Pete Seeger. 1997 (3rd ed.);
72 pp. \$15.95. Music Sales Corp.

"...can I read notes? Well, there are no notes to a banjo. You just play it."

— Old-time banjo picker, around 1850.

"The wind can blow one way but actually move you in another, and like sailing, you can use the wind in the wrong direction and still get somewhere you want to go."

—Pete Seeger

and Alan needed some help. He had a cubbyhole of a room in the very top of the Library of Congress, and stacks and stacks of records all around. He didn't have time to listen to them all. So he hired me for \$15 a week. I was overpaid at that. I got a little furnished room for \$3 a week. I had a bicycle, so I could pedal out to my father's house and get a good meal every few days. I listened to hundreds of records every week.

DK: What were your early enthusiasms?

PS: Banjos, fiddles. I liked the records of Uncle Dave Macon, Leadbelly, many others.

DK: You knew Huddie Ledbetter?

PS: Yeah, Alan introduced me to him in 1938. He was polite, not obsequious. Very proud, dignified. In his fifties at the time, graying hair, very muscular. He moved light on his feet like a prizefighter. When he took off his jacket, his muscles were enormous. If he hadn't been a musician, I think he would've been a champion athlete. He wanted to be the best.

But back to Alan Lomax. He started right off trying to find people who could introduce folk songs to city people. He found a young actor named Burl Ives and said, "Burl, you know a lot of great country songs learned from your grandmother, don't you know people would love to hear them?" He put on radio programs. He persuaded CBS to dedicate "The School of the Air" for one year to American folk music. He'd get some old sailor to sing an old sea shanty with a cracked voice. Then he'd get me to sing it with my banjo. I still sing this one: (sings) "'Tis advertised in Boston, New York and Buffalo, 500 brave Americans a

whaling for to go, singing 'blow winds in the morning' and so on..."

Alan found a talented young blues singer named Josh White and said, Josh, there's people up in New York who would love to hear you sing. Alan got him jobs at Cafe Society and the Village Vanguard.

In February, 1940 when Woody (Guthrie) hitchhiked east, Alan latched right onto him. In Washington he recorded Woody's entire life history on big acetate discs at 33-rpm, and very intently, he said, "Woody, do you realize you are a great ballad maker? You are in the tradition of the people who wrote the ballads of Robin Hood and the ballad of Jesse James. Don't let anything distract you in your life from writing ballads." Woody took it to heart.

DK: You latched right onto Woody?

PS: Well, I had a good ear and could accompany him in anything. My tinkling banjo went along with his guitar. I didn't play too fancy. Just gave him the right note at the right time with the right rhythm. He invited me to come out with him to visit his family in Texas.

What I started to tell you is that Alan and his father started off changing the definition of folk music from something ancient and anonymous to something very contemporary. Along came me and a whole train of people who learned from Woody and we are called folk singers. Now any person who plays an acoustic guitar standing up on stage with a microphone is a folk singer. Some grandmother with a baby in her arms singing a 500-year-old song, well, she's not a folk singer, she's not on stage with a guitar and a microphone. No, she's just an old grandmother singing an old song. The term "folk singer" has gotten warped.

We tried to call it "people's songs" back in '46. That didn't catch on. Our little organization went bankrupt in '49. Then came the Weavers. Then we were blacklisted. Then I said to heck with the commercial world. I was glad to leave it. Then I just went back to singing for kids in schools where I'd started at. In retrospect, the blacklist was a blessing in disguise.

Oh, sure, work in nightclubs was interesting. There were interesting people and places, but by and large, the commercial music experience...well, it's hard to find the words.

In the 1950s, I went back to teaching briefly 'cause I wasn't quite sure how to make a living. In 1953, the Weavers, as Lee Hays said, took a sabbatical and it turned into a Mondical and a Tuesdical. But some of the kids I'd sung to in summer camps a few years before were now in college. I went to Oberlin first and had a good time singing with them and the next year

went back and sang for twice as many. I then went to Antioch and then Reed College in Oregon. Then I was able to go to more conservative colleges, and by the end of the fifties, I was finally able to go to the big state colleges like Ohio State and Michigan State and others. These colleges and universities were much more sensitive to pressure. By the early sixties, I was making a living. I actually took my family on a short vacation (laughs). But I was working and what I did was show a whole generation of young people you didn't need to depend on the commercial world to make a living. Make the kind of music you love even if you never hear it on the air. This was the basic lesson I'd gotten from Alan. Alan said, Pete, look at all this great music around. You never hear it on the radio, but it's right there, great music.

I urged young folk to learn some of it. You can't learn all of it. In fact, anybody who wants to learn everything is pretty stupid. You learn what you can. Looking back, I think I tried to be too eclectic. Sometimes I'd sing thirty songs, and fifteen of them were not in English.

My grandson Tao Rodriguez and I often sing together now. He's good at the Spanish songs. Nowadays I don't sing much at all. I've got about 10 percent of my voice left. I shout the words for the crowd to join in on the chorus.

DK: Did you deliberately set out to revive folk music in the 1950s?

PS: I didn't call it folk music, I called it people's music, but it was a conscious effort. Many others picked up on Alan Lomax's urging, wanting this music to live again. Some folklorists just collected dead bones from one graveyard, only to bury them in another—their library. But we wanted people to sing 'em, make 'em part of their life.

DK: How do you recall your objections to Dylan going electric?

PS: It was at Newport, 1965. I couldn't understand the words. I wanted to hear the words. It was a great song, "Maggie's Farm," and the sound was distorted. I ran over to the guy at the controls and shouted, "Fix the sound so you can hear the words." He hollered back, "This is the way they want it." I said "Damn it, if I had an axe, I'd cut the cable right now." But I was at fault. I was the MC, and I could have said to the part of the crowd that booed Bob, "you didn't boo Howlin' Wolf yesterday. He was electric!"

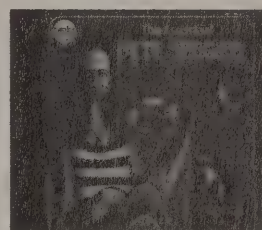
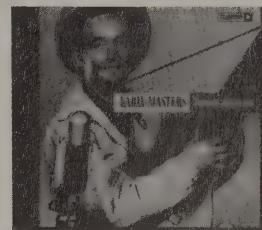
Though I still prefer to hear Dylan acoustic, some of his electric songs are absolutely great. Electric music is the vernacular of the second half of the twentieth century, to use my father's old term.

DK: What was the role of Moses Asch in popularizing folk music?

PS: A very big role. In 1939, Moses was installing PA systems in hotels. His father, who was the novelist Sholem Asch, said Moses, you have a recording machine. Put it in the trunk of our car. We are going down to Princeton to visit Dr. Einstein to record (Einstein's) statement for radio broadcast, urging American Jews to do more to help families get out of Germany. Over dinner, Dr. Einstein asked, "well, young Mr. Asch, what do you do for a living?" Moses responded, "I make a living putting public address systems into hotels, but I'm fascinated with this recording machine and what it can do. I found a Negro in New York named Leadbelly who nobody will record because they say he is not commercial. But I think this is American culture and he should be recorded. The Library of Congress, they just put this stuff in vaults, they don't make it available to the public." Dr. Einstein said, "You are right, Americans do not appreciate their own culture. It will be a Polish Jew like you who will do the job." So Moses recorded Leadbelly in 1939. Three 78-rpms in a cardboard folder called an album that he sold for \$3 or \$4. He sold 100 copies in a year. But the next year, in 1940, he learned a little more about sales. Woody Guthrie came to New York and Moses recorded him as well. Soon Moses Asch was selling 1,000 here and 1,000 there. When he died forty years later, he had more than 2,000 titles in his Folkways catalogue. LPs made Folkways possible, and Moses Asch made it possible for people to hear this music. I recorded mostly Folkways LPs for forty years. It was all given to the Smithsonian after Moe died. Smithsonian Folkways in Washington, D.C. releases all 2,000 titles now.

DK: This phrase, "long time passing?"

PS: I thought up those three words, and then a year later, I'm sitting on a plane and managed to connect them with three lines I'd read in a Soviet novel: "Where have the flowers gone? Girls have plucked them. Where have the girls gone? They've all married. Where have the young men gone? They are all in the army." Twenty minutes later I had a song. Joe Hickerson, then a college student, added the rhythm



THE ESSENTIAL PETE SEEGER
1978; CD. \$15.98
Vanguard Records

MA RAINY
The Complete 1928 Sessions
1996; CD. \$16.95
Document Records

THE WEAVERS AT CARNEGIE HALL
1963; CD. \$13.98
Vanguard Records

For Leadbelly and Woody Guthrie, see *Giants of the Folk Tradition*, page 23.

and the two last verses. I borrowed part of an Irish melody.

DK: You had an anthem.

PS: I am a lucky songwriter.

DK: You've said that your proudest accomplishment is the *Clearwater Sloop*, the sailboat dedicated to cleaning up the Hudson River which you helped create.

PS: I guess I've learned more from the *Clearwater* than anything else. All I did was help to plant a seed, and I didn't know what the hell I was doing.

DK: What sort of advice do you have for young people?

PS: Keep your sense of humor. There is a 50-50 chance that the world can be saved. You—yes you—might be the grain of sand that tips the scales the right way. It's a joyful, very exciting time. Live long!

I tell kids, don't trust the media. The media with their emphasis on fame is helping to destroy this country, helping destroy the human race. It's the plug-in drug. They say, "Well, if we didn't do it, somebody else would." Do you say, "if I didn't rape this woman somebody else would?" It is stupid and it is destructive. Our country is misgoverned largely because of the media. You can't blame it all on the politicians.

There are many people writing songs now. That is absolutely wonderful. Who knows, there may be some kid in diapers and he or she might succeed in capturing in a few dozen words what great writers have spent years trying to say. Just the right word in the right place with the right melody behind it and the right rhythm. It might get around the world inch by inch, and people realize that this world is in danger, that we're in danger. That's the way "This Land Is Your Land" got to be so well known.

David Kupfer's interviewed Hazel Henderson and Jerry Brown for *WER* and, in this issue, Pete Seeger and Ray Dasmann (page 84). He's working with the Ecological Farming Association on a video and book on California organic farming. He's tried to green Hollywood, worked environmental campaigns, and written for *The Progressive*, *Earth Island Journal*, and lots more. —PW

Where Have All the Flowers Gone

The Songs of Pete Seeger

I usually avoid multi-star tribute albums. But this is a keeper, so filled with heart and admiration that I can't help but feel my own love for our folk-elder grow with each listen.

Pete Seeger has created an eclectic legacy: radically political, silly, poetic, and infectious-musical. Here, more than thirty-six artists pounce on these qualities. My favorites include Ani DiFranco singing a less-known Vietnam song, "My Name is Lisa Kalvelage," John Gorka's spare rendition of "The Water is Wide," and "We Shall Overcome," sung by Bruce Springsteen with such conviction I'm reassured he's still "one of us."

In an elegant and respectful touch, each disk ends with Pete himself, first with the Weavers, then with his grandson Tao on a new tune called "And Still I Am Searching." Each time I hear this one, tears well up. Sometimes it seems that the only cure is to cue the first disk up again and sing along, as if Pete were right here, raising those hands palms-up. —Winslow Colwell



Where Have All the Flowers Gone The Songs of Pete Seeger

Various artists
1998; 2 CDs. \$29
Applesseed Recordings

The Hudson River Sloop Clearwater, Inc.

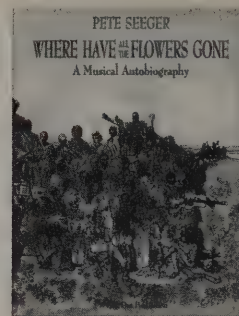
112 Market Street
Poughkeepsie, NY 12601
845/454-7673, www.clearwater.org

In 1966, Pete Seeger had the idea that learning to care for one boat and one river could motivate people to care about all waterways. He inspired fellow Hudson Valley residents to build the Clearwater, a 106-foot wooden sailing sloop patterned after the Dutch sloops of the eighteenth and nineteenth centuries.

Today, the Clearwater accommodates 20,000 children and adults a year on educational sails, attracts tens of thousands more to waterfront festivals, and serves as the focus and emblem of efforts to defend and restore the Hudson and other waterways.

—MKS

Pete Seeger's Books



Where Have All the Flowers Gone A Musical Autobiography

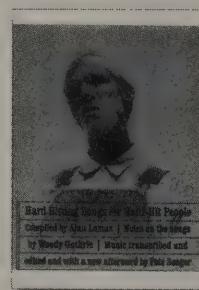
Pete Seeger. 1996; 288 pp. \$25
Sing Out! Publications (see access page 23)

Pete Seeger's Storytelling Book

Pete Seeger and Paul Dubois Jacobs
2000; 224 pp. \$24. Harcourt Brace

Where Have all the Flowers Gone is far more than an autobiography. It contains more than 200 songs with melodies and chords, and a social history found nowhere else of folk music's evolution in the past fifty years. Classic commentary on songwriting and social activism is supported chronologically by anecdotes, stories, photos, and drawings. For songwriters, historians, and students of folk music, an incomparable resource.

Pete's storytelling book is full of classic stories and familiar tales, stories based on songs and America's past, and brand-new yarns. It is an ideal volume for those wishing to begin a tradition of storytelling in their family, community, or classroom. —DK



Hard Hitting Songs for Hard-Hit People

Alan Lomax, Woody Guthrie, and Pete Seeger 1999 (reissue ed.); 372 pp. \$19.95
University of Nebraska Press

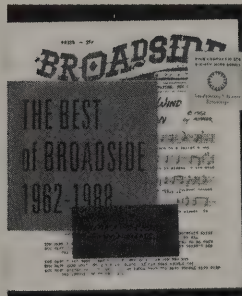
*For the passionate, three books (Alan Lomax's *Folksongs of North America*, John and Alan Lomax's *Folksong USA*, and *Hard-Hitting Songs*, are the essential texts of the American folk song. Irwin Silber, long-time Sing Out! editor, recommends newcomers start here. —PW*

**The Best Of Broadside 1962–1988
Anthems of the American Underground**

In Shakespeare's time, bards used "broadsides"—songs, poems, or polemics printed on large sheets of paper—to spread stories and scandal. In modern slang, to "broadsides" is to hit someone sideways with full force, often by surprise. Both meanings apply to this lavish collection.

Between 1962 and 1988, Agnes "Sis" Cunningham and Gordon Friesen published 187 issues of Broadside magazine out of their Manhattan apartment. Subtitled "a handful of songs about our times," it was a labor of love and skimpy finances reflecting the editors' experiences as labor organizers, musicians, and writers. Father-figure Pete Seeger shepherded things with his own songs and publishing help. Many of the singers of the eighty-nine songs here went on to much greater fame—Joan Baez, Bob Dylan, Janis Ian, Nina Simone, Arlo Guthrie, Lucinda Williams—while others remained known largely in folkie circles. All appear here in their early, sometimes seminal, years, often playing and singing into microphones in the editors' home.

The fact that most of the subject matter—anti-war, pro-labor, pro-civil rights, anti-nuke, pro-feminist—remains relevant renders this big box set not only enjoyable, but topically important, a stirring document.
—Steve Heilig



**The Best Of Broadside 1962–1988
Anthems of the American Underground
from the Pages of Broadside Magazine**

Jeff Place and Ronald D. Cohen, producers 2000; 158-page book and 5 CDs.
\$69.95 (\$74.45 postpaid). Smithsonian Folkways

Giants Of the Folk Tradition, Vol. 1

Huddie Ledbetter, Woody Guthrie, Odetta 1998; 3 CDs. \$19.98. Tradition/Rykodisc

Remastered from original recordings dating to the forties and fifties. Great price.



**Great Folk Labels
Suggested by Pete Seeger**

"Nowadays I seldom listen to any recordings. Literally, the only time I listen to music for the fun is in the wintertime when I make a little skating rink in our backyard. I turn on Caribbean steel drums; it's the best skating music in the world, much better than Strauss waltzes." —Pete Seeger

**A World of Sound
Smithsonian Folkways Catalogue**

Smithsonian Folkways Mail Order
Dept. 0607
Washington, DC 20072
800/410-9815; 202/275-1143
web2.si.edu/folkways/

Moses Asch and Marian Distler founded Folkways in 1948 to document music, spoken word, and sounds from around the world. In 1988, the Smithsonian acquired the Folkways archives from Asch's estate. All 2,168 titles are catalogued in A World of Sound, available as made-to-order CDs and cassettes. The Smithsonian Folkways Catalogue offers the 200 (and counting) titles added since 1988. —MKS

Arhoolie

Arhoolie Productions, Inc.
10341 San Pablo Avenue,
El Cerrito, CA 94530
510/525.7471; www.arhoolie.com

Folk-Legacy

Folk-Legacy Productions, Inc.
Box 1148, Sharon, CT 06069
800/836-0901; www.folklegacy.com

Rounder Records

Rounder Records Corp.
1 Camp Street, Cambridge, MA 02140
800/768-6337; www.rounder.com

Anthology of American Folk Music

The three volumes of Harry Smith's Anthology that Folkways released in 1952 were probably more responsible than any other recordings for driving the 1950s American folk music revival that spawned Bob Dylan, Joan Baez, et al. As Dave Van Ronk recalls, "The Anthology was our bible. We all knew every word of every song on it."

Smith concentrated on commercial records produced between 1927 and 1932. The Anthology sent a generation of folklorists armed with tape recorders to the South in search of living practitioners. Smith compiled material for a fourth volume that was never issued. In 2000, Revenant, working with the Harry Smith Archives, produced Vol. 4, recordings from 1928 to 1940. —MKS

Anthology of American Folk Music

Harry Smith, ed.
Vols. 1–3: 1997; 30-page liner notes, 67-page book, and 6 CDs.
\$79 (\$84.50 postpaid). Smithsonian Folkways Mail Order (see above)
Vol. 4: 2000; 96-page book and 2 CDs.
\$28. Revenant Records



Folk Song Essentials

- All the Pretty Little Horses
 - Amazing Grace
 - Buffalo Skinners
 - Careless Love
 - Erie Canal
 - Frankie and Johnny
 - Hallelujah I'm A-Travelin'
 - Hammer Song
- Hobo's Lullaby
- House of the Rising Sun
 - Joe Hill
 - John Henry
 - Midnight Special
 - Plane Wreck at Los Gatos
 - The Times They Are A-Changing
- This Little Light of Mine
- Trouble In Mind
- We Shall Overcome
 - Wearing of the Green
 - When the Saints Go Marching In
 - Which Side Are You On?
 - Wraggle-Taggle Gypsies

Suggested by Irwin Silber

Sing Out!

The basic American folk music resource for more than fifty years. Issues include words and music for twenty or more traditional and contemporary folk songs, plus articles, interviews, book and music reviews, event calendars. Pete Seeger's a regular columnist.
—MKS

Sing Out!

Geoff Millar, ed.
\$25/yr.
(4 issues)
PO Box 5460
Bethlehem, PA 18015
610/865-5366,
www.singout.org





Place Making

Ecological restoration and the loss of innocence. A ten-year update of volunteer service, watersheds, and community politics.

THOUGH THE LOSS IS daily—of bird or bug or hill or tree—there are those who do not believe the land is born to grief. Help it needs, yes, to bloom anew or as it did once before. Cut banks gape for care; stilled dawn songs hope against hope for more choral notes. But we and the land did not arrive forlorn together.

We know this in the doing. Burn the field, hang the bathhouse, plant the butterfly floral bed, excavate the cemented stream, herd the sheep or cattle at just the seasonal moment for just the length of time to just the pasture that needs their hooves and appetite. And patience has its happiness. In a year, the willow sprouts new stems; in ten, the tailings self-seed; in fifty, the oaks have stature.

Not all this needs to be seen. Another generation may never know that there was a “who” who did it, or why, as they stroll the mitigated estuary, fish a reconstructed stream, collect echinae in recovered prairie as if it had always been so.

Historians cannot explain how the grief—which still within the practiced eye remains—partly heals. All we know are our patchy and chaotic confrontations and caresses with the art of place making. After the work, we have become more intimately mingled, emotionally inseparable from rain and drought. Biospheric play has foggyly brought forth a bigger “us” to be sweet friends.

Reflections

In 1990, Richard Nilsen edited a *Whole Earth Review* issue on “Helping Nature Heal.” Revitalizing landscape seemed straightforward and fun and, though hard work, rewarding. Since

then thousands of healing-nature projects have blossomed, from gardens to intercontinental programs; from a few publications and tools to myriads. Principles and guiding aphorisms arose (see p. 28). Sophisticated distinctions emerged—between reconstruction, rehabilitation, restoration, mitigation, and reclamation (page 29). Richard Pyle invented “resurrection ecology” (page 68) to consider bringing back species that had become extinct. With no watershed left untouched, restoration became the “new frontier,” attracting a vibrant though small subculture, who caringly reflected on our damaged lands. Service to the landscape, bestowing a newly beautiful or preserved piece of the Earth to the young, accepting low or no financial gain to brighten the dark side of modern industrial expansion—all this and more strengthened the resolve and hearts of thousands of restorationists.

In a decade of work, place making matured. Networks crossed private/public boundaries, forged philanthropic and government cooperation, linked fourth-graders to members of Congress (page 77).

With all the enthusiasm and energy came what Bill Jordan, former editor of *Ecological Restoration*, pegged as a loss of innocence. Practitioners had to ask: How much should we uproot and eradicate in order to re-create? It’s easier to envision when the task is mine tailings all empty of life and crenulated with erosion cracks. But should we poison Lake Davis (CA) to rid it of nonnative pike? Even if locals are afraid for their water supply or fisherpeople prefer the exotics? Should we bring chain saws into wilderness areas to thin ponderosa pines (AZ) to bring the forest back from harmful fire-protection policies? Or are chain saws in wilderness areas a bad precedent? Should RoundUp and other herbicides be sprayed on

exotic grasses to encourage native prairie? In the Chicago controversy (page 48), citizens locked horns: Who cares if a former savanna is now a forest? The trees are big and beautiful and screen homes from other neighborhoods. Restorationists want to cut trees and euthanize deer. Save the deer! Stop the restorationists!

If I might dare speak for “America,” I would say we prefer to hide our losses, we have a not-so-secret thing for triumph, yet we advertise win-win as our ideal. These general feelings can make restorationists unpopular. Earth healers point to ecological smash-ups, regional decline from human enterprises, or a lack of health within the environments we have built. They pick at our religious world. After all, Creation did not require destruction. Creation was good, destruction is evil. What is this new paradigm that advocates remaking a sense of place and requires creation and destruction simultaneously—and requires them for decades?

In the years since our “Helping Nature Heal” issue, the restoration movement has entered a period of rich ambiguity that is harder to live with. The entanglements of people and watersheds have, in a sense, become more interesting than idealists planting trees and moving boulders. In this issue, *Whole Earth* explores a few of these more uncomfortable riches. For instance, after twenty-five years, people in the Mattole River watershed have put in countless volunteer hours and rehabbed an elegant small river. But the salmon have not returned (page 71). Where lies hope? In patience? In not counting salmon but praising community work? In New Hampshire, a loving family keeps the Old Man of the Mountain from losing his face (page 54). When does fiddling with nature become “faking nature?” When do

landscapes deliberately preserved by human intervention become Disney-like simulations? And who decides which "nature" should be copied or created? Is place making just human whimsy trying to capture an arbitrary image of an arbitrarily chosen era?

From within the movement, the restorationist and conservationist endeavor appears ludicrously small. But some citizens think it has too much sway over public and private property and is outright dangerous. In academia, some historians connect the native plant movement to early nativist policies in Nazi Germany. On AM radio, enviros have been called the Fourth Reich. Are these isolated puffs of hot air? Or should we pay attention (page 40)?

When the community music is not too shabby, we can dance with nature, not on it. Cows can make great partners (page 56). We can waltz with weed wrenches, tick pullers, seed strippers, even herbicides and clones. Dave Egan, the editor of *Ecological Restoration* (page 62), prefaced his help in finding us great tools with this call for harmony:

The most needed tools in all restoration are those tools that help us with our interpersonal skills. Tools that help us reach out to other people, learn what it is they need, allow us to make our case for ecological restoration to them, and then to come to agreement on how to proceed. This is our biggest roadblock, not technological innovation.

Maybe those laboring to regenerate and vivify landscapes and to thicken the human/nature drama are quixotic deer-like souls. Maybe they are magnificent and silly Don Quixotes, trying to stuff gold back into the Mother lode. Maybe, but from the stories we've gathered, it appears that an expanded eco-self has given (to those who see the wounds) a meaning unavailable in other walks of life. —PW

Volunteers

"The task of restoration, it's like..."

Prayer, work, eating—it makes me feel alive and part of the land, with other people, doing something worthwhile.

I would compare it to creating a family tree. In a family tree you have to research the past, learn about how the family grew, developed, then put it together like a puzzle.

Baking—I'm not sure why, I just know that I feel the same when I'm doing either one...complete...peaceful.

I would compare it to teaching. There's always more work to do than you have time for. The little victories of restoration are what motivate you and it's very rewarding, just like teaching.

Hiking in the woods—being in the natural setting does good things to my physical and emotional self, including reducing stress.

Gardening—it provides the same quiet time in nature with the potential for creating beauty and the frustration of weeds, "critters" and other never-ending challenges to progress, e.g. weather.

It's kind of like, if you make a mistake on a test, you go back and erase it. We're trying to erase our mistake.

Making quilts—one stitch, or one seed, at a time and in the end the result is fantastic, beautiful.

Home rehabs—if you restore an area to its original growth pattern it's like restoring a Victorian house to its original state and beauty—keeping it alive for the future.

Meditation—experiencing the "now" in the most positive way, being/working on a prairie-savanna is "finding your joy"!

Making chicken soup for a dear sick friend to whom I owe a lot—it is a form of healing, and good for me too—very psychological.

Learning a foreign language—we started out knowing absolutely nothing, and bit by bit began to learn vocabulary to develop sentences to communicate with others who know the language to teaching it to others with no knowledge at all.

Writing poetry/creating art—it's creative, positive, fulfilling, self-transcending.

Raising children—you see some good results, some bad, a lot unexpected, sometimes you have to just wait and see how things "fix" themselves.

A free vacation to a beautiful and exotic place—I consider it a pleasure and a privilege to spend time on the prairie.

Volunteering my time as a "Big Sister" to a 9-year-old African-American girl in Evanston through a mentoring program:

- both endeavors give me a chance to "give back" to my community.
- both provide me with wonderful learning experiences.
- both are activities that are very different than my professional work, are refreshing.
- both get me "outside" and into new environments.

—FROM *ECOLOGICAL RESTORATION*,
WINTER 2000 (SEE PAGE 34)

... a need to exercise our right as stewards of this Earth, our home, to protect what is nature...

Invaders are taking over the ridgetops, shading our plants that depend upon full sunlight for survival... We came to help it fight forever for its existence, before the battle—and the prairie—are lost forever.

I was ...waging war against some aliens!...If we don't fight back, they'll take over!...See the beauties? If we hadn't defeated the enemy, none of these would be here....Along with many like us, we can join forces to defeat evil alien.

Saving Antarctica or the Amazon rainforest is important, but we here in the Midwest can't do much about it. What we can do is to make a difference here in our own backyard.

We are a group of ordinary people—professionals, homemakers, students and retirees—joined by a common concern for our environment.

Unless something is done, we will witness the loss of oak woodland...just as our forefathers witnessed the loss of the bison, elk, and open prairie.

These natural areas present a striking contrast to the development activities all around us. Seeing a cornfield turned into a shopping mall or a woods transformed into a subdivision seemingly overnight can leave us with a sense of loss. Having those changes envelop an entire county...can destroy our sense of place.

As Aldo Leopold wrote, stewardship is right when it increases the integrity, stability, and beauty of the land.

— FROM *RESTORING NATURE*
(SEE PAGE 53)



FROM RESTORATION ECOLOGY (SEE PAGE 34)

Above: Restoration of bighorn sheep in Badlands National Park, South Dakota.



FROM ECOLOGICAL RESTORATION (SEE PAGE 34)

Ann Riley (middle), executive director of Waterways Restoration Institute, discusses soil-engineering revegetation with students along Village Creek in Albany, California.



FROM TOOLS, TREES, AND TRANSFORMATION (SEE PAGE 65)

High school students add boulders and bank structures to enhance habitat.

Here's a kind of ecological and community checklist for place making:

Close the Leaks

Stop the movement of excess nutrients, sediment, toxics, and soil moisture from the landscape—closing the wounds and blood flow.

Return the Lost

Bring back locally extirpated species and lost soil, by importing compost and making other soil amendments or, if necessary, by altering waterflows. In the future, maybe resurrect extinct species.

Nurture the Wanted

Encourage local/regional microbes, fungi, plants, and animals that remain in the area but in diminished numbers (e.g., native bees).

Remove the Unwanted

Eradicate those plants and animals that disrupt the foodweb and the nutrient, water, and energy organization of place. Eradicate those species that may irrupt into other areas, outcompete other species, and homogenize landscapes.

Make Acceptable Change a Community Decision

means just that. If a landscape is to be changed, discuss what's possible (especially financially and given the geographic scale), what's acceptable (given the outer envelope toward which restorers can push citizens), and what's maintainable (since place making is a long-term, intergenerational commitment). Web humans together generously. Enjoy the rituals of spring and harvest.

BACKGROUND: SEVEN GENERATIONS.
SEVEN-ELEMENT STEEL ICON. FREDERICK
FRANCK. PHOTOGRAPH BY JOHN LEWIS STAGE.
FROM PACEM IN TERRIS (SEE PAGE 25).

Skip if you're not interested in ecology

Here's my editorial: It's time to make distinctions so that we are not driven crazy by our own expectations. The "restoration" movement and its science can afford to move from one big vision to three types of place-making gems.

Reconstruction starts with damage so severe it can never be fully healed. There will always be scars and fragilities. The damaged heart will always have an artificial valve. As in the South after slavery, reconstruction is a new invention with new rules, organization, feedback loops, goals, and eco-structures. The desire is a good condition: one that is operational, a functional living community, just as the artificial heart allows a functional human.

In ecology, functional means an organized hydrology, solar capture of light, a supportive soil, and a regenerating assemblage of species. Typical habitats demanding reconstruction are landfills, leveed salt ponds, brownfields, or mine wastes. Because it requires total invention, recon closely follows social/economic desires. Recon remedies are experimental; the goal moves with outcomes, and, many times, species choice is constrained by what can survive. That's why

certain nonnatives—like those that can suck up heavy metals—may be preferred.

Politically, "mitigation" wetlands are usually constructions. They never duplicate the richness and subtlety of the original. Some government agencies use "reclamation" to mean "terrestrial reconstruction."

Rehabilitation starts with an intact eco-heart that is not functioning well. It requires a pacemaker, not a new valve. As opposed to reconstruction, the "older forms" of the place's ecology are pretty well understood. Work tends towards reversion—to the old stream channel, the old species mix. Most rehab projects close old wounds (the leaking toxics or sediment) and jazz up eco-complexity.

But, because labor and expenses can be overwhelming, some "functional equivalent species" are acceptable. Nonnatives may be so entrenched that land doctors decide to contain the disease (not cure it) or let the ecosystem function with imported species that appear to act as equivalents to the locals. Usually, rehab land is too fragmented or of too little acreage to bring back large predators or sustain viable populations. Sometimes the watershed is too dam-

aged to ever bring a reach of river into equilibrium. Like the heart with a pacemaker, there is no end to vigilance and maintenance.

"Enhanced" wetlands are the hydro-equivalent of terrestrial rehabs.

Restoration has a purer sense of the past and the greatest hope of full revitalization. There's a natural eco-heart beating. An eco-angioplasty plus good diet will make the ecosystem "as good as new." It is a "re-wilding" to pre-EuroAmerican times, with wolves and jaguars and native frogs and grasses. In a sense restoration is always an illusion, just as "perfect" health is an illusion, or a restored painting is controversially authentic.

New pathogenic microbes, insects, and climate change keep all ecosystems from being "just like they were." It is important to protect more acreage—buffer zones to shield the restored sanctuary, corridors to allow migrants.

Restoration is lovely. It's fine tuning—relinking insect with flower, seed with bird or ant, predator with prey. It is a craft and an art, up there with the greatest of landscapers and painters, perhaps; just a little below the divine.

	RECONSTRUCT Mine wastes, brownfields, leveed estuaries, cemented rivers	REHABILITATE Overgrazed grasslands, invaded habitats, damaged streams	RESTORE As in rehab, but goals are higher
SOLAR	Find plants that can grow and capture sunlight.	Increase leaf area.	Fine-tune solar-catching assemblage of plant metabolisms (C ₃ , C ₄ , and CAM).
SOIL	Construct a new soil profile. Control sediment, runoff, groundwater.	Amend existing soil (e.g., add compost). Halt excess erosion.	Maintain intact soil.
SPECIES	Invent/regenerate a workable community. Add mycorrhiza, plants, pollinators, etc.	Encourage balanced numbers of animal and plant species populations. Some predators will not be restored.	Fine-tune pollination links, local varieties, and seasonal phenology. Add back predators, with corridors.
"NATIVES"	Use regionally compatible species. Functional nonnatives, if they grow best and are non-irrupting.	Species that are only local/regional or functionally equivalent to local or non-irrupting.	Work to enhance genetic diversity with site-specific local varieties.
FIRE	Experiment if appropriate.	Manage human-set and natural fires for return of desired species mix.	In most habitats, revert to fires without human ignition and management.
HYDROLOGY	Create a new hydrology (channel network) and relink to pre-existing.	Encourage reversion to old channel forms and ability to handle floods.	Keep whole watershed in dynamic equilibrium.
CHEMISTRY	Close toxic and nutrient outflows; add missing minerals to create soil.	Close leakages. Remove or buffer toxics. Promote soil-profile self-regeneration.	Ensure that seasonal biogeochemical balances are in place for watershed.

For Fun and Comfort in the Field

by Peter Warshall

Thermo-Cool™ Headband Hydrokool™ Bandanna

About \$5 to \$7 each from Forestry Suppliers

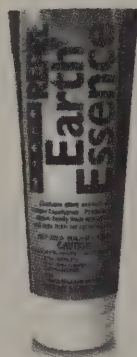


The best way to stay cool is to start work before dawn when the world is grayish but expectant, stop at noon, and then return to the field in the early evening. But given gringo time schedules and the nine-to-five work ethic, this is an infrequent habit. So here are a few tricks. Thermo-Cool's washable Three-in-One headband is 26" long and can be used dry, soaked, or soaked and refrigerated. HydroKool bandannas (40") can be wrapped around the body as well as the head or neck. Soaked for five to ten minutes, they work for eight to ten hours. The bandanna gel swells about one-half inch. By the way, my friend Greg Schoon tells me that Americans are chronically dehydrated, and lack of water contributes to our disease load. Thermo-Cool is not a substitute for drinking at least eight glasses of water daily.

Repel® Earth Essence Insect Repellent

\$5.95 for 5-oz. from
Forestry Suppliers

No DEET, but equivalent to 20-percent DEET, which is sometimes strong enough. (Cutter's varies from 7- to 35-percent DEET.) The repellent, a derivative of a lemon eucalyptus, is more effective than citronella, the classic New Age ingredient. Although I have not subjected myself to all of these, the label says that Repel disgusts chiggers, fleas, mosquitoes, ticks, and sand fleas.



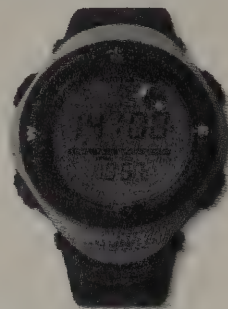
Emergency Ponchos with Hood

\$14 for pack of twelve from Ben Meadows

Caught in rain. No shelter. To save on weight, you didn't bring rain gear. You can start punching holes in Hefty bags for your head and arms, but there's no hood. These emergency ponchos weigh about an ounce each, and have a hood. Great if you're out there in a cloudburst with kids and old folks.

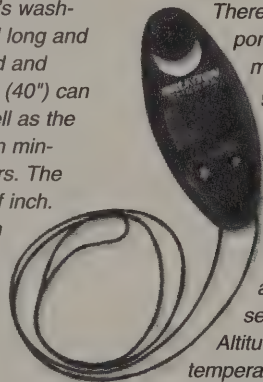
Suunto® Vector Computer/ Watch

\$199 from Ben
Meadows



Bruno Sherpa™

\$155 from Forestry
Suppliers



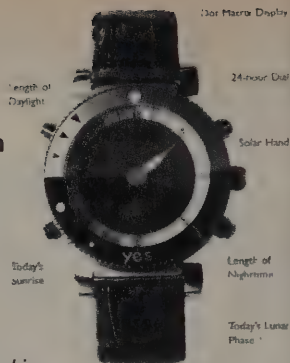
There are only a few ways to carry a portable watershed tool kit. Given my love of knowing what plant grows at what elevation and on what slope, and what the temperature is under trees vs. in the clearcut, I splurged on a Suunto Vector, which measures altitude, barometric pressure and trends, temperature, and compass direction, and serves as a clock and alarm.

Altitude varies with pressure and temperature, so claims of ability to measure to "within 10 feet" can rarely be met. The best method is to adjust the altitude every time you know it, and always after airplane rides and at new locations. Then you get a good feel (within 100 feet) of how high you are above sea level. There is lots of competition (Casio, Avocet) but the Finns (Suunto's Finnish) win on this one. To prevent temperature distortions from my wrist, I wear the Vector on my belt.

If you have a lovable watch, but want all the other info, the Brunton Sherpa is a four-inch watershed techno-amulet on a lanyard. The Sherpa has everything the Vector has (including the timekeeper), but also an anemometer that measures wind speed and wind chill in mph, knots, beaufort, km/h, and m/s. Its two-button operation is easier than the Vector's, and it's cheaper.

Solar/Lunar Watch

\$249 to \$399 from
YesWatch, 2269
Chestnut Street #618,
San Francisco,
CA 94123
877/937-9282;
www.yeswatch.com



A fairly heavy, Oreo-cookie-thick watch at upscale prices, water-susceptible, ringed by too many buttons that look very vulnerable to getting banged up, doesn't sound very attractive. Might make a better clock. But, Mike (who's worn it) and I found it intriguing for restoring our sense of "natural" time. The watch is in tune with day/night, sun/moon, solstice/equinox cycles. The "hand" circles once every twenty-four hours, and—the best part—the watch face displays day/night proportions and sunrises/sunsets. The moon on the watch face shows its phase. The digital display shows time, day, date, and sunrise/sunset times. It's programmed for 500 cities worldwide, or can be set by longitude/latitude.

Goja Pumice Hand Cleaner

\$4.95 for 18-oz. can from Ben Meadows

Cursing the tree sap, asphalt, adhesives, grease, putty under the fingernails, printer's ink that looks like blood? After a hard day's work, this giant can of non-petroleum pumice hand cleaner will turn the whole crew's hands dot-com clean. Conditioned with Vitamin E, lanolin, and aloe.

Dealing With Ticks



With Lyme disease, embedded ticks have moved from disgusting to dangerous. Forestry Suppliers offers tick/chigger gators that seal your boots from creepy crawlies reaching your skin (\$9.50). You can also buy permethrin-based (for outer fabric application only) tick-repellent sprays and concentrates. Toxic stuff. If you're penetrated,



Forestry Suppliers has a Tick Release liquid (\$3.50) with a Tick Nipper (\$6). With liquid and nippers you don't squeeze the tick's body on removal (which can force more tick saliva into the wound).

Cargo Bars

About \$20 from Ben Meadows

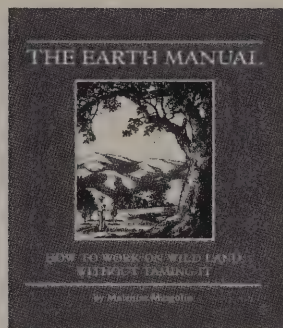


Packing in a crew, with gas cans, water coolers, and boxes of food, on a rutted, rock-filled dirt track? This extendable bar for pick-up beds will keep everything where you put it. Jam the stuff against the back of the cab, then screw the bar until it's tight against the sides.

The Earth Manual

How to Work on Wild Land Without Taming It

Malcolm Margolin. 1995 (reissue ed.); 238 pp. \$16. Heyday Books



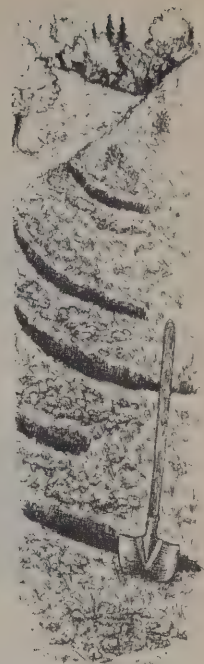
Richard Nilsen and I have reviewed this manual many times in Whole Earth publications since it appeared twenty-five years ago. Richard said, "For beginners, it has the best exploration of small-scale restoration techniques." I once wrote, "A whole book of gentle advice and easily absorbed wisdom." I now see how cogently the subtitle prophesied the manual's longevity. Even more than in 1975, humans now debate the "wild" and the "tamed," and The Earth Manual answers the debate with the quiet intimacy of doing—hands speaking to mind; tools speaking through the Earth; good works accomplished when difficulties block one's path; never too much, never too little, just enough. —PW

"If your problem is bank erosion, there are several steps you might take.

First of all, stop all physical injuries to the banks. In particular, stop grazing animals (cows, horses, and sheep) from breaking down the banks to get to the water. You may have to fence off parts of the stream and, if necessary, even build a watering trough away from the water's edge.

Next, you can build deflectors. Deflectors are basically piles of stone placed upstream from an eroding bank to absorb the force of the water.

"Contour trenches are simply ditches that you dig along a hillside, following a contour and running perpendicular to the flow of water. They catch water and allow it to sink into the ground before it can get a running start down the hill. Contour trenches are particularly valuable on hardened soil—like old logging roads—where water penetration is painfully slow.



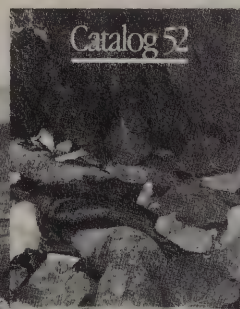
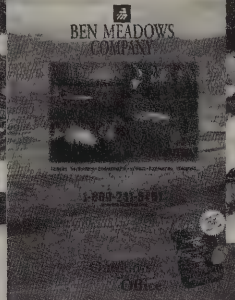
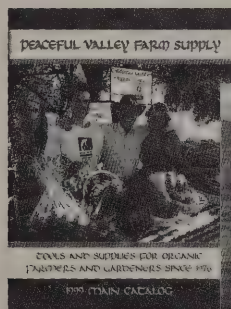
Restoration Product Catalogs

Peaceful Valley Farm Supply, Inc.
PO Box 2209, Grass Valley, CA 95945
888/784-1722, 530/272-4769,
www.groworganic.com

Ben Meadows Company
PO Box 20200, Canton, GA 30114
800/628-2068, 770/479-3130,
www.benmeadows.com

Forestry Suppliers
205 W. Rankin Street, Jackson, MS 39201
800/647-4203, www.forestry-suppliers.com

Terra Tech, Inc.
PO Box 5547, Eugene, OR 97405
800/321-1037, www.terratech.net



We reference these four catalogs throughout this issue. They are the mainstay sources of restoration tools, and my favorite places to think about how I would practically accomplish my dreams. Peaceful Valley emphasizes a world organic. It is family, farmy, and friendly, and the best source for comparisons of items like organic fertilizers. It's definitely Western-oriented, but when there's a choice, we usually look to Peaceful Valley. As Peaceful Valley focuses on farms, Terra Tech focuses more exclusively on professional forestry. A catalog for the already

involved and those honing their forest restoration skills.

Forestry Suppliers and Ben Meadows are catalogs for the major landscape architecture firms, logging outfits, park maintenance crews, firefighters, surveyors, and big-time monitoring groups. They have both begun to tap into the restoration market with items that are cheaper for big projects or that can be found from no other sources. Their educational materials are not really as high-quality as I would like (e.g., not the best field guides) but they're trying. —PW

In Service of the Wild

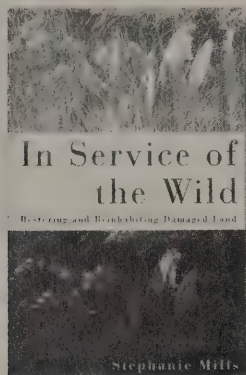
Restoring and Reinhabiting
Damaged Land

Stephanie Mills

1995; 237 pp.

\$23

Beacon Press



Once you feel that land and water bodies can suffer, the path to healing yourself as part of the "ecological self" begins to reveal itself. Stephanie is the tutelary spirit, guiding her heart, the reader's, and the heart of place; shepherding them through watersheds of ideas as well as landscape. Whenever I ask, "What's the most beautiful essay on restoration?," her epilogue to *In Service* comes first to mind. The restoration paradigm shift is as much Biblical as technical. From "dominion over" to "stewards of" to

"servants of" the Earth, each has its chapter and verse in the Old Testament. Stephanie, through stories and passionate prose, reminds us that a life of planetary service may satisfy being and beings more than any other endeavor. —PW

"The land I look out from has suffered.... The author Wendell Berry says that the story of our time is one of divorce and I fear that he is correct. We treat the Earth as we treat our affiliations. We demand outlandish things from it before we ever stop to pause and listen, and there is no love in this.

In thinking about [restoration projects] the Shack and the Arboretum, about the work in Auroville, and on the Mattole, and the North Branch prairies, one must be struck by what seems to be altruism, or an extraordinary imaginative empathy with nonhuman nature. To move to India and spend twenty years reclaiming a laterite plateau, to devote one's adulthood to the preservation, in context, of a native race of salmon, or to find vocation in resurrecting within city limits a whole forgotten ecosystem with its membership of rare and endangered plants—these are, given the dominant (but crumbling) paradigm, peculiar, nonsensical behaviors. The economics are unusual, for one thing, and for another, the beneficiaries of this seeming altruism—Carnatic bird species reinhabiting their range, king salmon fry sheltered in a hatch box, the fringed prairie orchid germi-

nating for the first time in a century in ancestral soils—do not repay their benefactors with ego-boosting thanks and praise, or even social justification.

However, the people I know who do this kind of work are satisfied by it in some basic and profound ways. It may be that they have developed what some thinkers are characterizing as an "ecological self," a sense of the human as being continuous with Nature, which, after all, is the simple truth. It's just that the political, economic, religious, and social forms that have come to predominate have required that we put the blinders on, and limit our concerns to self, state, and our own species. Ecological restoration is an act well-suited to rooting up this weedy, invasive paradigm and to reestablishing—with the significantly new amendment of conscious choice—ecosystems where ecological selves can make themselves at home and reproduce psychologically, if seldom physically.

It remains astonishing that people are willing to bend their backs working under punishing tropical sun or wade into icy rivers not for personal gain, but out of devotion. They are the bodhisattvas among us, and their numbers are growing. Someday, I hope, humanity will be a lot like them. This expansion or evolution of the human soul, its reintegration with the specifics of the planet, is an obvious and sensible step, the lifesome move. It is quite a threshold to be poised upon.

Green Phoenix

Restoring the Tropical Forests of
Guanacaste, Costa Rica

William Allen

2001; 310 pp.

\$35

Oxford University Press

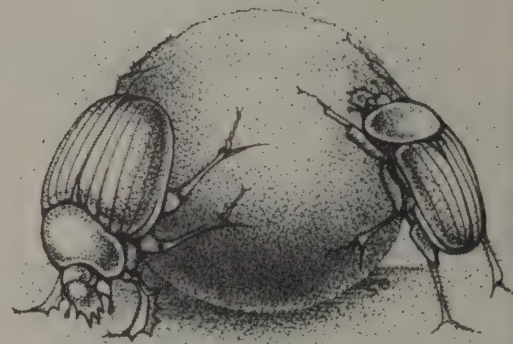


Restoration, at times, seems like a rich-nation indulgence. In most poorer nations, it's not on the agenda. Costa Rica is mid-ground. *Green Phoenix* is the first thorough account of precedent-setting work in Guanacaste Province. A 39-square-mile reserve becomes a 463-square-mile conser-

vation area that not only protects but also actively returns degraded land (including Ollie North's infamous airstrip) to tropical deciduous forest.

I can't think of any other accomplishment in the tropics that equals Guanacaste. There are many subtexts: the persistence and imagination of Dan Janzen, the brilliant University of Pennsylvania biologist, and his wife Winnie Hallwachs; the crucial roles of Costa Rican scientists and politicians, including President Arias; the validation of the beauty and need for tropical deciduous forests that are neither Anglo-European pastoral nor rainforest charismatic; and the discovery of what it takes to return artificial grassland back to tropical forest, giving tapirs and howler monkeys more room to roam. —PW

"On the misty slope of Volcán Cacao, beyond the barbed-wire fence that lined the road, the enormous tree stood alone amid a vast cattle pasture. The tree, a member of the genus *Nectandra*, a kind of small-fruited avocado, was easily 100 feet tall. Its narrow trunk rose high and naked before splitting into branches that bore leaves. This broad green



A dung beetle, one of the many kinds of insects that feed and breed in the feces of other animals.

crown radiated brightly, like an emerald, seemingly in defiance of the waves of gray fog that passed down through it and around it from the top of the mountain. In this patch of phantom forest, all but this one had been cut and burned to make way for the green gauze of grass that now rolled halfway up the volcano. It was an eerie sight, made all the more so by the blackened hulks of dead trees lying in the pasture. Although the forest was physically obliterated, its spirit seemed to linger.

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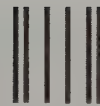
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Maps a la
carte, Inc.

TopoZone.com

73 Princeton Street, Suite 305
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978/251-4242, www.topozone.com
[Suggested by Dave Egan]

Topozone is the cheapest and easiest way to custom-design and download maps for your work. On their Web site, you can find every USGS map (by place name and state, features, or coordinates), and view or print it in b & w or color for free at scales of 1:24/25,000, 1:63,360, or 1:100,000. The area you choose can include overlapping USGS maps without showing seams between sheets.

An annual \$79.99 subscription to TopoZone's Topofactory Basic allows you to download an unlimited number of image files in TIFF or JPEG (for high-quality graphics or printing, or to configure into any shape or size you want). Scale options are 1:25,000, 1:50,000, 1:100,000, 1:200,000. Maps are digital raster graphics (DRG) scans, with a resolution of 125 dots per inch.

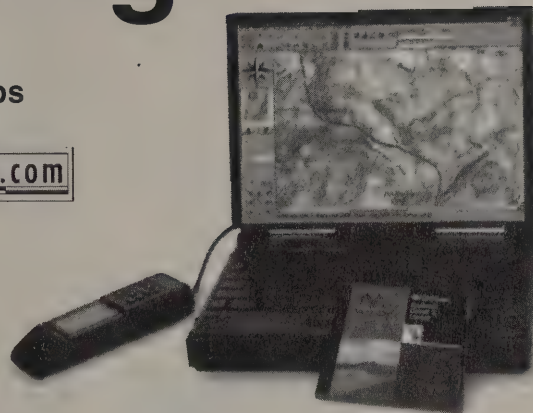
The more complex product, TopoFactory Standard, adds to Topofactory Basic the georeferencing (world file) information needed to create your own maps in CAD or GIS, using software such as ArcView. A \$149.99 annual subscription permits unlimited downloading of maps. —MKS

CD-ROMs of USGS Maps

Terrain Navigator and Terrain Professional

MapTech, Inc.
1 Riverside Drive, Andover, MA 01810
888/839-5551, 978/933-3000
www.maptech.com

MapTech offers two services: Terrain Navigator and Terrain Professional. Terrain Navigator provides regional maps on CD, at 1:24,000 or 1:100,000 scale, with resolution



of 400 dots per inch, updated as soon as USGS issues new maps. Maps cost between \$49 and \$149 per region (e.g., "Massachusetts and Rhode Island" is \$49; "California" is \$149). Maps can be viewed and printed in 2-D and 3-D ("glasses included but not required"). The company supports PCs only, but says it's had no complaints from people using them on Macs with emulation software. Terrain Professional CDs, with georeferencing info for GIS use, are \$975 each and cover much smaller regions (you'd need twelve for all of California!). —MKS

GIS Access

See Whole Earth, Fall 1998, page 57 for groups such as the Society of Conservation GIS and the Conservation GIS Consortium that offer GIS assistance (including free software) to nonprofits. (The Consortium has a new URL: www.pacificbio.org/Conservation-GIS-Consortium/CGIS.html.)

ArcView GIS

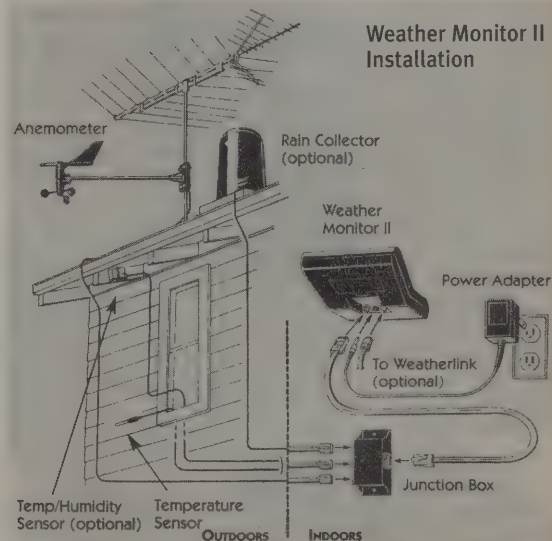
The most widely used GIS software program is ArcView, from Environmental Systems Research Network [ESRI], (909/793-2853, www.esri.com), a company that helps indigenous people and conservation nonprofits obtain the right stuff for their needs.

Weather Recording

Thoreau thought tracking weather was just as hot (or cool) as taking a bath. Maybe more. Now he could sit inside, poached or chilled, and watch the screen of his Davis wireless, solar-powered weather station (about \$800 with solar plates). Instead of having a nameless friend holding an umbrella over his notebook while he wrote, he could record the rainfall, temperature, windchill, and time right onto his PC (add \$165). To save a few C notes, he could remain an on-the-grid luddite with Davis's plug-in monitors. Most likely, Thoreau, always eccentric and a fierce upholder of the individual, would walk in hail and dappled light, holding his Kestrel 3000 hand-held weather device (Whole Earth, Winter, 2000), a pocket-sized weather recorder.

Despite my equal obsession with halcyon days and warring elements, I don't own any of these recorders (though I've worked with them), but I would if I lived in one place and wanted to gossip with my neighbors. Barring that, balancing costs with obsessions, you can custom-design your weather recording, everything from a simple rain gauge (\$5 and up) and outdoor thermometer (\$13 and up) to the super-comprehensive \$1,150 Davis GroWeather (includes growing days, evapotranspiration, solar radiation, etc.) by checking out Davis Instruments (www.davisnet.com) or Forestry Suppliers or Ben Meadows (see page 31). Ben Meadows has the clearest access.

One irresistible last gadget: The SkyScan Lightning Detector (\$189 from Ben Meadows). It listens for claps of thunder, records the intensity of lightning bolts, and tells you how long before an approaching storm is too close. —PW



Restoration Publications

Ecological Restoration

Since it's as true now as it was then, here's what Richard Nilsen wrote a decade ago: "This 'bulletin board' of environmental restoration does a nice job of serving both a profession and a movement. It's the best single source for restoration news. Because this is a new field of pioneering spirit, the writing is usually straightforward and the stultifying peer-reviewed prose found in so many scientific journals is missing. There are long articles, plus abstracts from diverse small publications and conferences...."

I might add that Ecological Restoration has grown. Its young spirit now includes essays on the complexities of a more mature movement and science. Unsurpassed access to Web sites, books, and abstracts. It's the town square of Restoria. Dave Egan, ER's editor, has been crucial to this issue of Whole Earth. —PW

"It is one of the oldest arguments in restoration circles: Is our goal to create a more-or-less faithful copy of a lost ecosystem or ecological process, or shall we strive for a site that responds to the current socioeconomic milieu in which we work, live and experience nature?"

"Because we participate in the dynamics of ecosystems as we restore them, restoration practice is in essence antithetical to the idea of

pristine wilderness....We become performers in an on-going process of creation, and in doing so we defy a basic assumption of environmentalism. No wonder we invite resistance. We are charged with "faking nature."

Examples of abstract titles:

Tidal Marsh Restored in Record Time
Changes in Carbon Cycling As Forests Expand to Tallgrass Prairie
Teachers Can Increase Students' Ecological Knowledge but Not Easily Alter Their Attitudes Toward Nature
Thermal Imagery in Aerial Survey of Animals

Ecological Restoration

David Egan, ed.
\$37/year (four issues), University of Wisconsin Press
2537 Daniels Street, Madison, WI 53718. Included with membership (\$67) in the Society for Ecological Restoration, 1955 West Grant Road, Tucson, AZ 85745
520/622-5485, www.ser.org

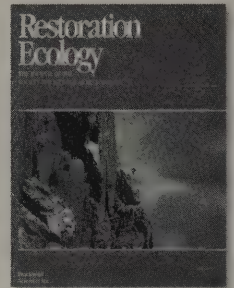


Restoration Ecology The Journal of the Society for Ecological Restoration

Edith B. Allen, ed. \$110/year (four issues)
Blackwell Science, Inc.
Commerce Place, 350 Main Street
Malden, MA 02148
Reduced rates for members of the Society of Ecological Restoration (see above)

The scientific journal that branched off from what is now Ecological Restoration. Best for specific issues such as Big Horn Sheep restoration and the "best" cutting edges of this applied science.

—PW

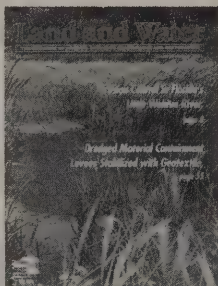


Fine Publications on Helping Nature Heal

by David Egan

Land and Water The Magazine of Natural Resource Management and Restoration

Teresa Doyle, ed.
\$20/year (six issues)
PO Box 1197
Fort Dodge, IA 50501
515/576-3191
www.landandwater.com



If you don't believe that ecological restoration (broadly defined) has become a business, like everything else in the United States, then take a look at Land and Water. It was previously a trade journal for the erosion control and water management industry; the publisher and editors "got religion" in the early 1990s and climbed onboard the restoration bandwagon. While

the editors still run a fair number of articles about hydroseeding, stormwater management, and the like, they also feature stories such as, "Wildflower Seed Choices," "Pond Planting for Habitat," and "Contractor's Perspective on Roadside Management." A gritty, all-American, ad-supported effort.

Reforestation Scotland

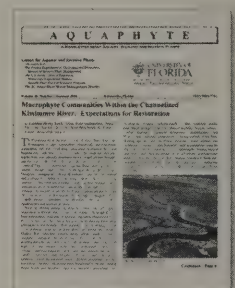
Mark Ballard, ed. (four issues)
62-66 Newhaven Road
Edinburgh, EH6 5QB Scotland
+ (0)1 31 554 4321
www.gn.apc.org/ReforestationScotland

I love Reforestation Scotland, and someday I hope to go there so that I can talk and work with some of the folks whose stories fill its pages. This journal is alive with ecology, art, history, and living with the forest beings on equal terms. There is a strong sense of a social/environment movement in Scotland that really comes through each article—a concerted effort to make restored forests a sustainable economic force in the community, but one that respects and nurtures, rather

than simply exploits, the woodlands. The magazine's supporting organization, Reforestation Scotland, Ltd., also has a few other noteworthy publications, The Community Woodland Handbook (1998) and Woods for All: Case Studies 1997-1999.

Aquaphyte A Newsletter About Aquatic, Wetland and Invasive Plants

Victor Ramey and Karen Brown, eds.
Free (2 issues/year)
University of Florida
Center for Aquatic and Invasive Plants
7922 N.W. 71st Street
Gainesville, FL 32653
352/392-1799
plants.ifas.ufl.edu



Read by managers and researchers in seventy-one countries around the world, Aquaphyte is a literal (no, not littoral) storehouse of information about invasive aquatic plants. The people who work on this sixteen-

page newsletter also maintain the 52,000-citation Aquatic, Wetland and Invasive Plant Information Retrieval System (APIRS), and each issue contains a splendid bibliography of the latest research on aquatic invasives. Aquaphyte also includes book reviews, a list of upcoming meetings, and annotated Web sites—all focused on aquatic plants that have become problems in natural areas and other wet places in our increasingly homogeneous world.

Greener Roadside
An FHWA Quarterly Newsletter for Roadside Decision-Makers

Bonnie Harper-Lore, ed. Free (four issues/year)
Greener Roadside
Federal Highway Administration

Office of Natural Environment, HEPN-30
Room 3240, 400 Seventh Street, NW
Washington, DC 20590. 651/291-6104
www.fhwa.dot.gov/environment/newsltr.htm

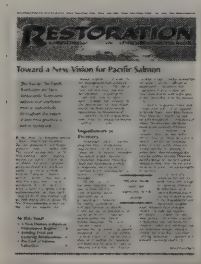


Wouldn't it be great if our roadsides were planted with colorful, resilient native grasses, wildflowers, trees, and shrubs rather than ubiquitous and costly carpets of grass? For at least a decade, Bonnie Harper-Lore has been championing this cause as part of her job with the Federal Highway Administration. Her newsletter, Greener Roadside, focuses on sharing information about noxious weeds, native plants, restoration, vegetation management, and public policy issues as they relate to roadside landscaping. One of the latest issues includes an update on a federal effort for the control of exotic species. Excellent reading, even at 65 miles per hour!

Restoration A Newsletter about Salmon, Coastal Watersheds, and People

Joseph Cone, ed. Free (four issues/year)
Oregon Sea Grant Program,
Oregon State University, 402 Kerr Administration

Corvallis, OR 97331-2134, 541/737-2716
seagrant.orst.edu/communications/restore.html



In the Pacific Northwest and northern California, salmon have become the rallying cry of numerous restoration efforts. Some of these have been contentious, especially those involving dam removal, while others, such as the Mattole Project, have been models for developing a sense of community and place. This newsletter from the Oregon Sea Grant Program provides an excellent perspective into the issues involved in this work of restoring species habitat and, in the process, the human/nature community. Articles from a recent issue include "From Assessment to Action in Watershed Restoration," "Highlights of NMFS' Final 4(d) Ruling," "Restoration Projects Complicated by Permit Requirements," and "Advisory Committee Agrees: Changes to Oregon's Forest Practices Are Needed."

Wild Earth

Tom Butler, ed. \$25/year (four issues)
Wild Earth Society, Inc.
P.O. Box 455
Richmond, VT 05477
802/434-4077
www.wild-earth.org

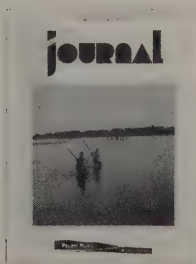


Wild Earth is a class act with great articles, tasteful layout and graphics, and a well-defined focus. Restorationists interested in wilderness issues will find a place by the campfire amidst updates on the Wildland Project and articles such as "Naturalness and Wildness: The Dilemma and Irony of Ecological Restoration in Wilderness," "Rewilding Mallory Swamp," "Would Ecological Landscape Restoration Make the Bandelier Wilderness More or Less of a Wilderness?"

Prairie Plains Journal

Jan Whitney, ed. (Annual) included with membership (\$10 and up) in
Prairie Plains Resource Institute
1307 L Street
Aurora, NE 68818
402/694-5535,
www.prairieplains.org

Located in the small town of Aurora, Nebraska, not far from the Platte River, Jan

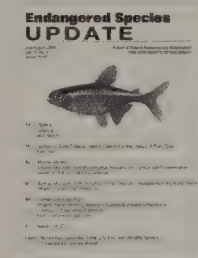


and Bill Whitney and their associates continue to set a high standard for community-based restoration activities. Their Summer Orientation about Rivers (SOAR) program is arguably one of the best, but least well-known, environmental education programs in the country. Meanwhile, Bill's dream of establishing a sustainable Middle Platte River watershed is beginning to take shape—utilizing the same formula of building collaborative working partnerships that has become a trademark of all PPRI activities. The Prairie Plains Journal documents these projects and more, making the reader feel right at home with the knowledge that ecological restoration is alive and well in Nebraska.

Other Journals/Newsletters

California Coast & Ocean

\$18/year (four issues)
Coastal Conservancy
1330 Broadway,
11th Floor
Oakland, CA 94612
510/286-0934
www.coastalconservancy.ca.gov/coast&ocean



Endangered Species UPDATE

\$28/yr. in US,
\$33/yr outside US (six issues)
School of Natural Resources
University of Michigan
Ann Arbor, MI 48109
734/763-3243

Natural Areas Journal

\$30/year (four issues)
Natural Areas Association
PO Box 1504, Bend, OR 97709
541/317-0199, www.natareas.org

Wildland Weeds

\$20/year (4 issues)
Florida Exotic Pest Plant Council
Dan Thayer, Treasurer
Florida EPPC, PO Box 24680
West Palm Beach, FL 33416
daniel.thayer@sfwmd.gov

Whole Earth Access to Restoration Schooling

by Brian Lavendel

The next century will, I believe, be the era of restoration in ecology.
—E. O. Wilson, 1992

The science of restoration is young. The good news is that academic institutions—and other organizations—are investing increasing amounts of resources in researching and teaching ecological restoration.

Students wishing to study restoration ecology will find a wide array of programs and possibilities, from the community college to the undergraduate and graduate level. Prospective students can choose from occasional courses found within departments of biology or forestry, to majors with an “emphasis” in restoration ecology, to full-fledged “programs” in ecological restoration.

The cost of each program varies with the school. Students should be prepared for the often hard and dirty work of manhandling nature—removing invasive plants, digging up drainage tile, placing riprap along streambeds. It's not all about counting butterflies. With the exception of UC Davis, the schools do restoration work in their local ecosystems.

Future restorationists should also know that, too frequently, the compensation tends to come more in the sense of doing good than in large paychecks. For those hoping to make a career out of restoration, prospects are mixed. Secure, long-term positions are hard to come by. Future practitioners can expect to compete for relatively few jobs—at least until government and industry embrace the practice of restoration ecology.

But in a karmic sense, the rewards of practicing restoration are deep, and the work has a way of turning itself inward. We restore ourselves, our sense of purpose and good, by restoring the place around us.

ACADEMIC PROGRAMS

University of Northern Iowa Department of Biology

University of Northern Iowa
Cedar Falls, IA 50614-0421
319/273-2456, www.bio.uni.edu/

University of Northern Iowa's biology major, with an ecology and systematics emphasis, gives undergraduates a strong foundation in biology while preparing them for careers in ecological restoration. Professor Laura Jackson notes that the program grew out of the region's own particular historical context—large-scale agriculture. The program is particularly well-suited for students wanting background and experience in restoration of old fields and farm land.

University of Wisconsin-Madison Landscape Architecture, Soils, and Zoology

Institute for Environmental Studies
Science Hall, 550 North Park Street
Madison, WI 53706-1491
608/263-1796, www.ies.wisc.edu/cre/

The University of Wisconsin-Madison has been a force in ecological restoration for at least thirty years, according to landscape architecture professor Evelyn Howell. Aldo Leopold was at the Arboretum and major info like the journal Restoration Ecology (page 34) originate here. The Center for Restoration Ecology offers an interdisciplinary program with faculty from agronomy, botany, forest ecology and management, and horticulture.



FROM TOOLS, TREES AND TRANSFORMATION (SEE PAGE 65).

Prescott College

220 Grove Avenue
Prescott, AZ 86301
520/778-2090,
www.prescott.edu/rdp/rdp_es.html

All I can tell you is that the students who have graduated from Prescott (and the Yale School of Forestry) have been incredibly impressive. Whole Earth contributor Gary Paul Nabhan is a typical Prescott alumnus. Whatever they're up to, Prescott and Humboldt State (CA) seem the best small colleges for generalist backgrounds in natural communities and committed ethics. —PW

Yale School of Forestry and Environmental Studies Ecosystem Science and Management

205 Prospect Street
New Haven, CT 06511
203/432-5100, www.yale.edu/forestry/

Masters and doctoral programs feature ecosystem ecology courses in restoration. Yale's Master of Forestry program, the oldest continuing forestry program in the western hemisphere, boasts Gifford Pinchot as one founder and Aldo Leopold as a 1909 graduate.

Laurentian University Department of Biology

Sudbury, ON P3E 2C6
Canada
705/675-1151,
www.laurentian.ca/biology/consrestecol.html

Students can take a “Conservation and Restoration Ecology” option within the Bachelor of Science in Biology. It includes courses in plant, animal, and soil ecology; wetland ecology; freshwater ecology; and bioclimatology. In this part of Canada there's plenty of work to be done, thanks to the long local history of mining and smelting.

**Northern Arizona University
Ecological Restoration Institute**
P.O. Box 15018
Flagstaff, AZ 86011
520/523-7182, www.eri.nau.edu/

NAU's program, enrolling about two dozen students at any one time, is housed in the School of Forestry. Research at NAU focuses on local biomes—especially ponderosa pine and desert riparian systems. Says professor Wally Covington, "We are surrounded by ecosystems of outstanding beauty and tremendous natural value....But many of these landscapes have been severely degraded," due to grazing and forestry. Student Janelle Clark gives this testimonial: "It ties in fieldwork with classroom work," providing students with direct experience in the practice of ecological research and restoration.

**University of Victoria
Restoration of Natural Systems
Diploma and Certificate Program**
Division of Continuing Studies
PO Box 3030 STN CSC
Victoria, BC V8W 3N6
Canada, www.uvcs.uvic.ca/restore/

Offers courses for those who need to study on a part-time basis and who are already working in restoration and want to deepen their background and broaden professional skills. "All of our instructors are practitioners," says advisor Richard Hebda. The only prerequisite: students must have some working experience and a strong interest in doing environmental restoration work.

**University of California Irvine
Department of Ecology & Evolutionary
Biology**
321 Steinhaus Hall
Irvine, CA 92697-2525
949/824-6006

Prof. Peter Bowler says he's developing the school's restoration program as an "ethical response to habitat loss in California." Bowler's classes emphasize the salvage and preservation of local plants and seed for use in restoration efforts. Heavy in science, with courses in genetics, population ecology, and evolutionary biology.

**University of Michigan
School of Natural Resources and
Environment**
Dana Building
430 East University
Ann Arbor, MI 48109-1115
734/764-6453, www.snre.umich.edu/

Offers a course in restoration ecology. Associate Professor Bob Grese says that students take a variety of classes that provide a background in ecological restoration. Often

includes opportunities for fieldwork. One year, students worked on a degraded fen in Ann Arbor. Later they helped a city park in Detroit take 100 acres out of mowing and return it to native prairie and savanna.

**University of North Texas
Department of Biological Sciences
Environmental Sciences Program**
Institute of Applied Sciences
P.O. Box 310559
Denton, TX 76203-0059
940/565-2694, www.ias.unt.edu/

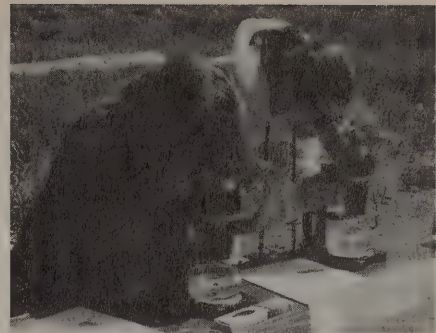
At the University of North Texas, two departments not typically associated with one another—philosophy and environmental science—work closely together. Such cross-disciplinary cooperation allows students to study ecological restoration while gaining a strong background in environmental ethics. Former student Steve Windhager, who studied the use of burning and mowing in restoring abandoned farm land and now directs the Center for Landscape Restoration at the Lady Bird Johnson Wildflower Center, argues that the field benefits from having a broad base. "To solve environmental problems it takes more than one discipline, because environmental problems don't recognize disciplinary lines."

**University of California Davis
Graduate Group in Ecology**
2148 Wickson Hall
Davis, CA 95616
530/752-6752, ecology.ucdavis.edu/

The Restoration Ecology Area of Emphasis mirrors the growth in restoration ecology as an academic discipline. It is the fastest growing AOE in the Graduate Group, with students studying a wide range of restoration ecology-related topics. Fieldwork projects pursued by students have involved restoration of mangrove systems in Mexico, tidal wetlands, and fire regimes at Lake Tahoe.

**Columbia University
Biosphere2**
32540 South Biosphere Road
Oracle, AZ 85623
www.bio2.edu, 520/896-6400

Biosphere2 is now a part of Columbia, its western outpost. They give a course (for credit at any university or college) on global management, emphasizing the local ecology of the Southwest as the launch pad. As long as Dr. Tony Burgess is on the faculty, this program, chock full of intense field trips, will be totally rewarding. The man simply knows more about ecology and can sprout more enthusiasm than anyone I've met. His student project is restoring mesquite bosques. Students come from majors in arts as well as economics and science. —PW



FROM TOOLS, TREES AND TRANSFORMATION (SEE PAGE 65).

PRIVATE LEARNING

Wildland Hydrology Consultants Short Courses

Catalog from:
157649 US Hwy 160
Pagosa Springs, CO 81147
970/264-7100

Dave Rosgen sponsors a summer school for professionals, students, and other maniacal watershed lovers. Learn to use his tool kit for watershed doctoring. Courses include applied fluvial geomorphology, grazing in riparian systems, water rights, and instream flows. Expensive, but also the best around. —PW

Andropogon Associates

374 Shurs Lane
Philadelphia, PA 19128
215/487-0700, www.andropogon.com

Great consulting firm for apprentices and out-of-school training. Specialty is rehab and restoring more humanized landscapes (e.g., Central Park, New York). Works closely with communities combining local knowledge with scientific. A legacy of Ian McHarg and probably the best private consulting firm doing "middle landscape" restoration. —PW

California Ecological Restoration Projects Inventory

<http://endeavor.des.ucdavis.edu/ceipi/>
A combined private/nonprofit/government effort to establish a database, accessible through the Internet, containing information on restoration projects in California.

Internet Listings

Netscape Education Links

<http://sites.netscape.net/ecore restoration/education.html>

Netscape NGO Links

<http://sites.netscape.net/ecore restoration/orglinks.html>

Brian Lavendel is a reporter from Madison, Wisconsin. He writes stories for *Ecological Restoration*.

Donella's Last Review for *Whole Earth*

Seeing Nature

This book sat on my desk unopened for a long time, because I mistook it for a la-la, lyrical, nature-appreciation exercise. When I ran out of everything else to read, I opened it—and got sucked in.

It is indeed a book written by a careful observer of nature, but what Krafel observes is pattern and dynamics and enduring systems principles. Looking at a disappearing snow pile high on a mountain, he sees that in concentric circles around the snow the alpine plants vary from squashed and dormant (right where the snow is melting) to beginning to sprout (further out) to sending up leaves (still further out), putting out buds, blooming, setting seeds. In a glance he sees a time series, a month or two of emergence from under the snow.

Hiking in the desert on a hot day, he goes through one quart of the gallon of water he brought along by noon. He wonders why he's hauling so much water. But the next quart is needed much sooner, and by the third quart he begins to worry whether he's brought enough. He begins to muse about time lags—in the heating of the Earth each day, and in the rate at which his body stores and expends water.

He watches sand fleas hopping about on a beach and figures that's all sand fleas ever do. But one day he sits down among them. The hopping ceases. The fleas start digging burrows and mating and exhibiting all kinds of complicated behavior. "The reason I had seen the sand fleas always hopping whenever I approached them was because I was approaching them. I had mistakenly assumed that the only behavior I ever saw was the only behavior the sand fleas ever had."

My favorite story is Krafel's attempt to repair an eroding field full of gullies. He tries to block the biggest gullies to hold back water, which involves moving a lot of dirt, and every time it rains, his efforts are quickly washed away. He wishes he had a bulldozer, but all he has is a shovel, so he moves uphill and starts diverting the flow in smaller gullies. He gets better at it, and discovers that he is dissipating the flow, so the water no longer concentrates into the big gullies. It is dispersed throughout the field and sinks in instead of running off. —Donella Meadows

“ Practice initiated a spiral of learning between the field and myself. My structures evolved from opposing the flow of water to turning and leading the water onto new paths. These structures fit better within the flow of water and accomplished more with less effort. Because of the wisdom evolving within the design, I could now make more divergences with the same amount of energy and time. The work was acquiring possibilities.

“ That bird is more than a bird. That bird has survived early summer snowstorms at timberline....

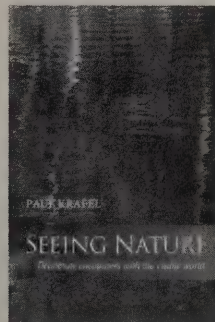
That cliff is more than a cliff. It was stripped by the cataclysmic floods from Lake Missoula. It has received thousands of years of bird droppings vibrating with Columbia River salmon energy....

And I am more than a person. I am one of a recently evolved species. We are mobile consciousness, gifted with incredible powers....

We live within a world thick with relationships chanting stories. Even so, I can forget to listen. Then my awareness ebbs. I start thinking of myself as separate, alone, autonomous.... But when I listen to the stories that the world tells, the inspiration and the power return and my life takes on grace.

Seeing Nature Deliberate Encounters with the Visible World

Paul Krafel
1999; 193 pp.
\$15.95
Chelsea Green



Donella Meadows

I loved so many sparkles and reflective facets of Dana. With each one revealed, she became a more delightful and mysterious person. I first understood her specialness at a meeting of business professionals. Their constricted hearts and state of denial seemed outrageous, painful—if not counter-productive. Dana leaned over. “Just tell them,” she said. I poured out my feelings, and she followed with her typical brilliance, scribbling a map of their business system and how their economic model would ultimately turn against their own dreams.

Her essay, “Places to Intervene in a System,” erupted in a similar meeting. Already enshrined as a classic, it will remain like those of Orwell or Aldo Leopold. She wrote it as a gift to *Whole Earth* (Winter, 1997). It was true Dana—eminently helpful to those engaged in this world; acting as a friend with its exquisite clarity and mindfulness; filled with sweet intellect and spectacular articulation. All her work sheltered fledgling ethical imaginations—thousands of citizens, readers, students, friends, and colleagues. Her writing and generosity never slowed.

Dana was a faultless listener. At a World Wildlife meeting on sustainable forestry, we heard highly intelligent professional foresters describe supply, demand, and the global wood economy; and then a shaman from the Dream Change Coalition on how the industrial world could not understand trees until it changed its dreams. Donella got up and, on a whiteboard, charted the value chain from forest to consumer. On top, the tree as commodity. Below and parallel, the tree as “entity,” a value in itself, a life worthy of respect. She turned and said simply: “These two must be made to work together.”

She was the master. She presented “systems” to citizens and students unfamiliar with feedback and feedforward loops, “S” and “J” curves, and number crunching and geometry as they applied to organizations. When she heard about a grassroots issue, she wrote one of her syndicated columns featuring it, and helped those struggling by placing the



Donella died in February, less than a month after contracting bacterial spino-cerebral meningitis. She authored nine books, including *Limits to Growth* and the twenty-year follow-up, *Beyond the Limits*. She was a systems analyst from the great school started at MIT, a professor at Dartmouth, a syndicated columnist ("The Global Citizen"). She lived on an organic farm with cohousing in New Hampshire. She was a contributing editor and dear friend of mine and *Whole Earth's*, a founder of the Balaton Group on sustainability, and a MacArthur Fellow. She started her career as a bio-physicist (Harvard, 1968). —PW

issue in a systems context. I once tried to protect the Mt. Graham red squirrel's habitat from a clear-cut on Forest Service land. She quickly turned it into a news column on values and systems of decision making.

Her interest in pattern was a compassionate path—to remove blame from individuals and focus human energy on useful leverage points and correcting system perversities. Once these were made explicit, she strongly believed, humans would naturally want to bring to pass a bigger world of goodness. Revenge and put-downs were not in her toolkit. Creative destruction of harmful patterns was central.

We talked poetry outside of meetings. Emily Dickinson was one inexhaustible source of articulate wisdom. Although we never chatted about spiritual/religious texts or legacies, I know no other person who so openly encountered whatever sufferings crossed her path, and did so well to reduce whatever pain she could. This, to her, was true progress. "Growth" was improving one's skills, insights, and teaching powers to bring others along.

She was flabbergasted by business/consumer definitions: "How did we get so fixated on 'growth?' How can anyone be in favor of 'growth' without first asking: growth of what, for whom, at what cost, for how long?" She literally wrote the book that most powerfully questioned "economic-growth-as-the-solution-to-everything-global." *Limits to Growth* unnerved the world.

For years we e-mailed and phoned. We had a small unspoken ritual: to give each other a paragraph or two of what was most vivid about life now, vivid as a moment in seasonal change, vivid as a simple event among the creatures of the Earth. Inadequately, I honor her and my foundering grief by offering you a sampling:

*Earth is thawed, lambs in the barn,
chicks in the brooder, farm ducks laying
eggs but not brooding yet, thrushes just
returned (YAY! I root for them every year),
woodcock "peenting" at low candlepower of
evening, Venus and Jupiter in conjunction
in the morning sky, spinach and peas and
onions planted.*

*The good news is, though, that out
of that work I have \$400,000 worth of
grants and 3 teams modeling the produc-
tion and distribution systems for 3 com-
modities — shrimp, corn, and forest
products. The work is fascinating and
very challenging. The systems are humon-
gous and becoming more so all the time.
(One-third of the corn grown in the US is
now gene-spliced! On average 5 pounds
of bycatch are destroyed for every pound
of shrimp caught! Brazilian pulp is
now being sent to Pennsylvania paper
mills, putting all the local loggers out of
business! Aaaaaaagh!!!!)*

*Beautiful golden light of the southward-
falling sun. First hard frost expected on
Friday. Robins in great flocks heading
south. Forests turning into miles and miles
of glory. We have three new Jersey calves!*

*Colors are EXPLODING here!!!!!!
Such a joyous last hurrah every year.
Makes me believe that God loves us and
also has a great sense of fun.*

*It's beginning to cool here in the
Northeast—August always contains hints*

*of fall. The hermit thrushes start singing
again now for some reason. The first migra-
tory birds are flocking with their grown-up
babies. A coyote made so many murderous
forays into my sheep that I sold the sheep
rather than watch them turn into food for
coyotes and turkey vultures. The gardens
are in their glory and we eat about 12
different veggies at every meal, including
now the new potatoes.*

*Did you MEAN that about visiting
the farm? That would be so cool! (Literally,
at this time of year. We are iced in. I slip
and slide to get to the chicken house and,
even worse, to get back from the chicken
house with eggs in my pocket. Why am I
so stupid as to carry the eggs in my pocket
when I come back over the ice? You know,
I ask myself that question every day.)*

*Here's a puzzler. In the middle of a
raging snowstorm last week I saw two
ROBINS in my crab apple tree, greedily
downing shriveled, frozen crab apples.
(They looked very colorful against the snow,
and they looked healthy and fat.) I have
NEVER before seen robins here between
October and March. I hadn't seen these
two before and I haven't seen them since.
What's going on????*

*These calm winter days are so gentle,
so silent. Except for the chickadees, who
are always bustling and now starting their
spring feeeebeeeees.*

*America already junked much of its
excess capital, especially in steel, machine
tools, etc., over the past 20 years. In terms
of real assets, we may be beginning to rise
out of the trough (though paper assets are
still overvalued). Asia is behind us, getting
hit hard now. We're about to find out
whether our economy is really globally
linked to theirs or not.*

*As for me, I put my faith in good top-
soil and big trees and clean-running
streams and mutually supportive human
communities and honest work that provides
what people really need.*

To paraphrase what she herself said
of other friends:

Rest in peace, great soul. You leave a
great unfillable hole behind. —PW

Green Nazis?

When restorationists press America to rid itself of alien, invasive species, do they foster anti-immigration isolationist paranoia? Are they too purist, too authoritarian?

by Peter Warshall

Kalispell, Montana (2001): Locally popular AM talk show host John Stokes rails: “Nobody elected the Fourth Reich, the green Nazis, the environmentalists.” Audubon members are “extremists to the core.” Stokes leads an economic boycott of any store that contributes to the Rocky Mountain Alliance.

Washington, D.C. (1994): President Clinton issues a presidential memo to give preference to native plants on federal lands and in White House gardens.

Berlin, Germany: Two academics warn that the German Green Party is echoing neo-fascist ideas by promoting native plants.

New York (1994); Michael Pollan, a gardening writer for the *NY Times*: “It’s hard to believe that there is nothing more than scientific concern about invasive species behind the current fashion for natural gardening and native plants in America—not when our national politics are rife with anxieties about immigration and isolationist sentiment. The garden isn’t the only corner of American culture where nativism is in flower now.”

It is always awkward to write about Nazis. The Holocaust slammed my non-religious family back into their Jewish identity. Raised in the concentration camp aftermath, with my family looking for survivors (we only found one), I used to dream of miraculous escapes from Auschwitz and kill-the-fuckers heroism to bury my intense six-year-old fright and helplessness.

Now, what I love—intact ecosystems, restoration practices, and engaged activism—has been blasted as Nazi and Fourth Reich in scattered radio stations across the nation. Much more quietly and thoughtfully, historians have connected native plant restorationists to National Socialist “nativist” and

racist ideology. John Stokes of Kalispell is *typico* of the outraged media sector who believe “varmintalists” are way too powerful and totalitarian, and are out to crush the freedom of real Americans. Historians Joachim Wolschke-Bulmahn and Gert Gröning jump-started the more sedate debate, now continuing in restoration and botanical journals, at conferences and in books (see references, page 42). Their questioning rankles: Do restoration ideals feed an anti-immigration paranoia or ethnic cleansing in the name of eco-nativism? Are those promoting pre-European landscapes too authoritarian?

These high IQ-types and simple-minded announcers may be periph-



FROM NATURE AND IDEOLOGY (SEE PAGE 42).

eral. By giving them attention and energy, I may just puff up the importance of eerie scholarship and flamboyant rhetoric. Can we ignore it? Or is this an insane ideology about to blossom?

Himmler’s Horticulture

The Nazi story in Germany was a story of biophilia gone bad. A confused and desperate people—suffering from the Versailles Treaty, the loss of World War I, and economic depression—seized, for pride and identity, the imagery of their own blood and soil. It was impossible to spice up “superiority” with architecture (the Greeks and Romans were not Germans) or literature and art (the French and Italians were not Germans). So “blood” (the Teutonic tribes of yesteryear) and “soil” (the plants within the Germanic provenance) became the hooks on which to hang nativism, racism, and self-confidence. The future Germany was to be a pure landscape inhabited by an untainted race.

Joachim Wolschke-Bulmahn, a major historian of the native plant movement in Germany, claims that native plants “became the landscape architect’s swastika.” He quotes

Above right: Gravestone in the Hilligenloh cemetery, designed around 1930 to resemble ancient German burial sites. Note reversed swastika (Nazi swastika has been banned).

Alwyn Seifert (a leading German landscape architect during the Nazi period) as saying “nothing foreign should be added, and nothing native should be left out.” The ideological attention to pure bloodlines led Nazi-time botanists to advocate a “war of extermination” against a foreign impatiens felt to be out-competing the “native” impatiens. With the invasion of Poland, Heinrich Himmler pressed Nazi policy-makers to complete the Reich’s Landscape Law to force the exclusive use of native plants within its empire. Nature had been nationalized and became totalitarian and violently enforced. You are as your plants.

Wolschke-Bulmahn upped the ante from intellectual to personal when he connected Jens Jensen, the hero of American prairie restorationists, to the Nazi period. He quoted (out of context, many feel) from a 1937 article Jensen had printed in Germany:

“The gardens I created myself shall...be in harmony with the landscape environment and the racial characteristics of its inhabitants.... The Latin and the Oriental...creep more and more over our land, coming from the south which is settled by Latin people....The Germanic character of our race, of our cities and settlements [has been] overgrown by foreign character. Latin spirit has spoiled a lot, and still spoils things every day.”

This kind of history is juicy. It makes academic and radio announcer careers by elevating their public profile and stirring the citizenry’s pot. I’m not qualified to argue the history but, as a former elected official and a maniacal naturalist, I’ll jump here into the fracas.

Stormtrooper Plants

The historical interpretation of the native plant movement in Nazi Germany does not imply a repeat by

American restorationists. In logic lingo, an analogy is not a homology. Neil Diboll, president of Prairie Nursery in Wisconsin, argues that native plants are more like the Jews and Gypsies of the Nazi period. The American restorationist movement is more analogous to those trying to save the minorities and the weak, instituting a multiculturalism in the face of homogenized landscapes. Select invasive nonnatives are, he says, “stormtrooper plants that are blitzkrieging across the landscape and literally displacing native plants, forcing them I wouldn’t say to extinction, but, in many cases, to extirpation, at least locally.” There is nothing tall, blond and blue-eyed in the US, British, or Costa Rican restorationist image. Protecting niches for the rare and bohemian is paramount. Though natives are the focus of both periods of history, now the intention is, more or less, diversity. Then, it was a rationalization for superiority (*uber mensch*).

The whole debate is muddled. The history of the German garden and Nazi obsession with cemeteries and memorials to the slain, for instance, cannot be extrapolated to today’s restorationist vision. In fact, many landscapes considered for restoration and conservation cross borders and span thousands of miles. Migration habitats for Monarch butterflies, for instance, require maintaining and restoring milkweeds from Canada to Mexico. As far as I know, the Nazis never got to thinking about restoring migratory eagles, warblers, cross-border wolves, or wild oxen. They never confessed to the dependence of German birds on African wintering grounds. In stark contrast, enviro-restorationists have promoted natural areas in both North and Latin America to create sanctuaries for birds who are explicitly and proudly held as multinational “natives.” There is exquisite attention to detail. Some birds, bats, butter-

flies, and whales now appear to citizenry as “native” to two continents. *Lebensraum* (living space) is now about partnerships on varied ecological scales (from gardens to continents), not territorial control by violence.

This is not to minimize the accomplishments of the nature-garden historians. They *have* productively questioned the poetic and political implications of “alien,” “invasive” and “exotic” as words for disruptive species. If we call kudzu, eucalyptus, buckthorns, and Mexican nationals “aliens” and “invasive” extralopers into US territory, then we are configuring how we speak, think, and discriminate reality with identical words for different events. Perhaps, reflecting on the malfunctions of Nazi propaganda, it is time for a more exacting vocabulary.

Restoration wishes to limit *irruptive*, *aggressive*, and *disruptive* species. These species or races can be native, nonnative or bio-engineered. A native like the mesquite tree was once limited to groves in riparian areas but—because of cattle, changed fire regimes, and prairie dog extirpation—irrupted into the grasslands of the Southwest, to the frustration of pronghorn and ranchers. Tamarisk, a nonnative Asian tree, promoted and planted by federal agents for erosion control, has thoroughly disrupted Southwestern riparian communities.

Filtering species for their potential to disrupt pollination, seasonal food supply for others, seed dispersal, and sheltering capacities requires no reference to their alien status.

The green Nazi debate leads us to ask: What’s native? and how far should we go to keep local races and species in place? For instance, must redbud be excluded in southwestern Wisconsin (it is exotic to the state) even though it grows a dozen miles away in northwestern Illinois? Must Wisconsin contain the Illinois

redbud invasion? In Indiana, the American yellowwood has been seen in only a few counties. Should it only be allowed as a plant in the restorationist palette in those counties?

In direct contrast to Nazis whose ideology and conquest centered on national boundaries, today's restorationists prefer to think dynamically and bioregionally. To most restorationists, national, state, and county lines are arbitrary. With habitat conversion and climate change, a restorationist could easily decide that redbud is a good choice in Wisconsin or that yellowwood should be allowed to expand into a new county.

The Multicultural Chestnut

Prof. Harrison Flint has further pushed the native/nonnative issue. The American elm has been decimated by the imported Dutch elm disease. Saving the American elm probably requires mixing its genes with those of Asian elms. No reason to glue oneself to American purity when it means a species demise. A little impure hybridization can be a good restorationist tool. In fact, restorationists have already adopted this strategy with the American chestnut and the Florida panther. Nearly wiped out, the American chestnut has been saved by the Chinese chestnut and its hybrids. It is now a multicultural chestnut. A few panthers of the Texas race have been introduced into Florida to prevent genetic inbreeding. American pragmatism and understanding of race or insect/pathogen/tree webbing makes "now" totally different from the racist Nazi "then."

Finally, the analogy of Nazis to restorationists or environmentalists is rhetoric based on a kind of witchcraft in which one creates and exploits paranoia by taking one similarity and extrapolating it to prove a big picture. ("Have you ever known a Communist?" "Yes." "Then you must be one.") Montana has

been twisted by logger and miner job losses, and limits placed on snowmobilers. Understanding the big picture—global shifts, resource and natural-area losses—has become irrelevant to loggers and snowmobilers in the wake of their anger and loss of historical power. I feel the same muted misplaced fears reading the historians of the German native plant movement. Both worldviews yearn for greater unbridled "freedoms," be it freedom to log to the last tree or snowmobile wherever or, as Wolschke-Bulmahn has indicated, freedom to move plants anywhere around the world for the sake of horticulture and experimentation.

As Neil Diboll has pointed out, the green Nazi controversies sprout from a deeper layer of soil: How much freedom and what responsibility accompany freedoms? How much of what you do is your own right, and how much belongs to the commons? Bio-irruptors and snowmobile compaction/disturbances cost taxpayers, and so enter the commons. Bio-irruptors cost over \$138 billion a year just in the US. So fiscal conservatives and restorationists tend to advocate strict regulations of both imported plants and bioengineered plants, in order to minimize disruption. Similarly, environmentalists advocate limited snowmobile freedoms.

The balance of freedom and responsibility says: You can freely plant anything you want in your garden, as long as it doesn't jump the fence and cause your neighbor or the whole nation grief. My neighbors in Tucson, for instance, planted South African sweet gum that irrupted into the Sonoran desert and covered cactus and other indigenous shrubs.

After protests by many, the horticultural industry developed a sterile hybrid with the same luscious cadmium blossoms but no ability to irrupt.

In contrast to many, I relish Americans without facilitators, blaring their hearts with witty mudslinging and Abe Lincoln wisdoms, in

town meetings and media, as long as the debate remains physically nonviolent, free of vigilantes, stormtroopers, and forced removals. So I thank Mr. Stokes, the historians and the back-and-forth letter/essay writers for stirring the pot.

But, mostly I thank them for warning me that "they" are out there and, if I don't pay attention, all the good works of the conservators and restorers could vanish in a wave of bad-mouthing or cerebral jesuitry. It's happened before. The need for an enemy overwhelms even the accuser's self-interest.

My most conspiracy-haunted friends ask: Are restorationists being maligned as Nazis so that the globalists can spread bioengineered invasives all over the planet without control? Are there aliens in your backyard? Sigmund Freud has been quoted as saying that, at times, paranoia is the healthy attitude. Now back to uprooting French broom that smothers the Miner's Lettuce trying to find sunlight on the hillslope outside our door.

References

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Nature and Ideology: Natural Garden Design in the Twentieth Century. Joachim Wolschke-Bulmahn, ed. 1997; 278 pp. \$50. Dumbarton Oaks Research Library and Collection. Downloadable at www.doaks.org/WONAC.html.

In *Nature and Ideology*: "The Nationalization of Nature and the Naturalization of the German Nation: 'Teutonic' Trends in Early Twentieth-Century Landscape Design." Joachim Wolschke-Bulmahn; "Ideological Aspects of Nature Garden Concepts in Late Twentieth-Century Germany." Gert Gröning.

"Jens Jensen, Native Plants, and the Concept of Nordic Superiority." Dave Egan and William H. Tishler. *Landscape Journal* 18(1), 1999.

Multistate, Multinational Natives

The whole concept of "native" breaks down if we consider roaming and migratory species. And humans as well as some plants and animals and fungi are, by nature, on the move. Greenways for wolves, blueways for whales and turtles, skyways and floral ways for birds, bats, and butterflies. To accommodate these multistate, multiregional, and multinational natives, various restoration projects cover huge expanses of land and water. Since we have reported on them before (WE, Summer 1998), we'll just picture the North American-based projects for a taste of a restoration that nurtures immigrants and cross-border travelers.

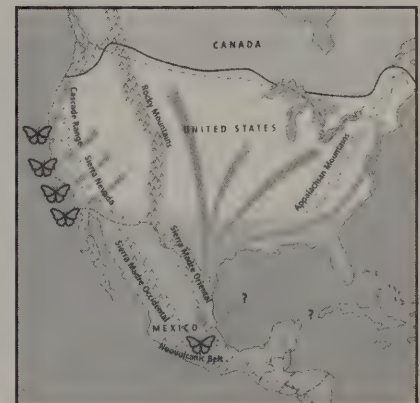


Multinational Restoration Projects

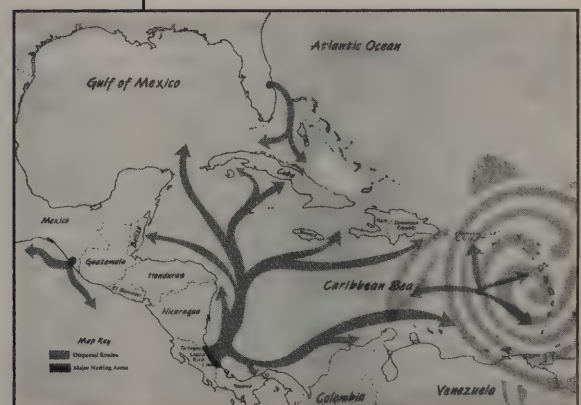
1. Yellowstone-To-Yukon Project (Canada, US)
www.rockies.ca/yzy, yzy@banff.net, 403/609-2666
2. Columbia River (US, Canada, Pacific Ocean)
3. San Francisco Bay/Delta (US, Canada, Latin America, Pacific Ocean)
4. Tijuana Estuary (Mexico, US, Pacific Ocean)
5. Colorado River and Delta (US, Mexico, Pacific Ocean, Latin America)
6. Sonoran Desert Biosphere Project (US, Mexico)
7. Greater Gila Project (US, Mexico)
8. Mississippi Delta (US, Gulf of Mexico, Latin America)
9. Everglades (US, Gulf of Mexico, Atlantic Ocean, Latin America)
10. Kissimee (US, Gulf of Mexico, Atlantic Ocean, Latin America)
11. Chesapeake Bay (US, Latin America, Atlantic Ocean)
12. Hudson River (US, Atlantic Ocean)
13. Great Lakes (US, Canada, Latin America, Atlantic and other oceans)
14. Greater Laurentian Wildlands Project (US, Canada)



Paseo Pantera Project (Colombia, Panama, Costa Rica, Nicaragua, Honduras, Belize, Guatemala, Mexico).



Monarch migrants go from Canada to Mexico. The NAFTA natives.



The same green turtles are "native" to Cuba, Belize, Nicaragua, Costa Rica, Colombia, the Greater and Lesser Antilles, the Dominican Republic, and Puerto Rico.

Removing the Unwanted

The gardener curses the Japanese beetle, the park ranger battles spruce budworm, the desert lover tries in vain to contain South African buffle grass. Even though only a few aggressive, irrupting, and disruptive species occur among the thousands of newcomers, fighting them is like a war, a drama filled with invasions and counterattacks. The behavior of the few—loosestrife, eucalyptus, kudzu, tall fescue, cheat grass, cowbirds, starlings, large-mouth bass—is out of control, homogenizing land and waterscapes, devouring taxpayer dollars, and ruining the last "heritage" scenery of North America.

Since Columbus, more than 30,000 species of imported plants, animals, and microbes have made their homes in North America. They cost the US more than \$138 billion each year (e.g., weeds about \$35.5 billion; insects about \$20 billion; and human-disease organisms about \$6.5 billion).

The "unwanted" come in three varieties: imports, native irruptors, and bio-engineered. The imports arrive, intentionally or not, from other continents or regions. The "native" species become community disruptors, usually after human land/water upset (e.g., mesquite, cowbirds). These aggressive spreaders evade, resist, or out-compete local species. Finally, bio-engineered species escape from labs, test plots, and farms. The best counterattacks include prevention by regulating entry at the borders; biocontrols after escape; re-creating earlier habitat conditions; and, where possible, the practiced stewardship of eye and hand by human labor, machinery, burning, even herbicides.

Removing the unwanted can be painful. It's creative destructive. Taking life is hard, even when there's an understanding that it will nurture a healthier or more supportive future. For more oaks, girdle eucalyptus; for more prairie, herbicide tall fescue; for more Kirtland's warblers, trap cowbirds; for more native trout, biocide hatchery-bred races, etc., etc. As the Chicago controversy (page 48) reveals, the exchange of life for life will never be easy, and each community must ultimately work out its own limits to acceptable restoration. —PW

Life Out of Bounds

What happens when all the natural boundaries that separated species around the world for millions of years are removed, willy-nilly, in the blink of an evolutionary eye? Out of my window in northern California I see "open space" with Australian eucalyptus, South American pampas grass, and French broom, all living within a matrix of wild oats from Europe. On the asphalt below, the suffering nightcrawlers, crushed brown snails, and potential parasites in the fresh dog doo are all descended from recent Old World immigrants, as am I. Clearly things have gotten a bit mixed up, and it's not all pretty. The question is, does this homogenization of the world's biota matter, and if so what can be done about it?

Life Out of Bounds is the best modern synthesis on bioinvasion. Very readable, and

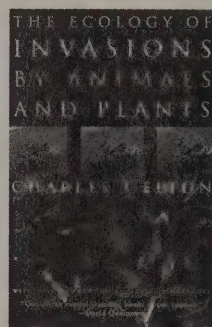
reasonably priced, this book is for any Earthling wanting a fuller understanding of life in the Homogocene. —Leif Joslyn

“There are several promising developments outside biotech—for example, marine biocontrol. One potential target is the green crab, which could be attacked with a weird barnacle that is one of the crab's native parasites. The barnacle replaces the crab's gonads with itself, thereby rendering its host sterile. There are now also contraceptive "vaccines" for some mammals, and artificially produced pheromones (signaling chemicals) that confuse the mating instincts in certain insects. Given the rate at which invasions are proceeding, research on these and other "counterinvasion" techniques deserves a high priority on the conservation agenda.

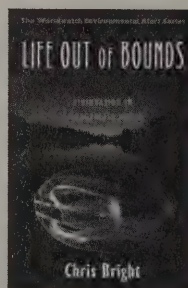
The Ecology of Invasions by Animals and Plants

While Rachel Carson's 1962 classic *Silent Spring* launched the modern environmental movement by alerting the world to the perils of chemical pollution, Elton's book (written several years earlier) was largely ignored except among a few in the scientific community. Environmental groups and resource agencies are finally realizing that his was an equally important clarion call. Invasive species are clearly a form of global change, causing serial extinctions, decimating entire forests, transforming landscapes, and challenging human health. And while there is an avalanche of literature now being generated, Elton's book still stands as among the finest. Nice pictures, great maps, perky prose, low price, and a new forward by Dan Simberloff make this reprint a worthy addition to any library. Place it right next to your copy of *Silent Spring* to balance what should have been a two-toned call to make peace with the natural world. —LJ

“We must make no mistake: we are seeing one of the great historical convulsions of the world's fauna and flora...we are living in a period of the world's history when the mingling of thousands of kinds of organisms from different parts of the world is setting up terrific dislocations in nature....This book is about biological explosions.



The Ecology of Invasions by Animals and Plants
Charles S. Elton
2000 (university ed.); 81 pp.
\$13
University of Chicago Press



Life Out of Bounds: Bioinvasion in a Borderless World
Chris Bright
1998; 288 pp.
\$13
W.W. Norton

Invasive Plants

The desk encyclopedia, state by state, of disrupting, irrupting species. —PW

“Kudzu

A high-climbing perennial vine from eastern Asia, kudzu has alternate leaves and deep purple, pealike flowers. Although the vines are killed each year by frost, the deep fleshy roots survive the mid-winters of the South and resprout with vigor each spring.

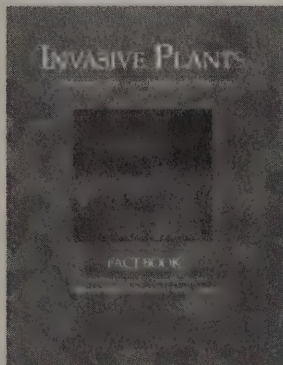
1876. The Japanese first exhibited kudzu as an ornamental vine at the Philadelphia Centennial Exposition in 1876. Soon afterwards, kudzu became valued for the fragrant purple flowers and the large hairy leaves that provide dense shades for an arbor or a screen for a fence. Later kudzu was grown in the southern United States as a forage crop, to reduce erosion, and to improve the soil.

1935....At one time, the federal government paid as much as \$8 per acre for farmers to plant kudzu. Kudzu clubs were formed to promote its use, including the 20,000-member Kudzu Club of America. Soon communities were holding kudzu festivals and crowning kudzu queens.

1946. Kudzu had been established on 3,000,000 acres of highly erodible land across the South.

1955. The plant had escaped its original plantings and covered power poles, trees, shrubs, gardens, fences, and anything else that stood in its path. Kudzu's ability to grow as much as a foot per day during the summer months eventually earned it the name “the vine that ate the South.”

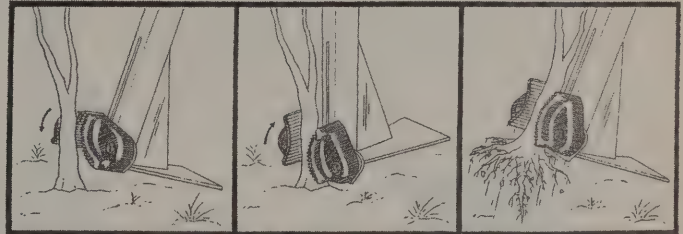
1998....The plant poses a serious threat to timberland, because the dense foliage totally blocks out sunlight. Over 7 million acres are estimated to be infested.



Invasive Plants
Changing the Landscape of America
Randy G. Westbrooks. 1998; 109 pp.
\$15 (specify item no. 024-001-03607-0)
Superintendent of Documents, PO Box 371954, Pittsburgh, PA 15250-7954
202/512-1800, www.bookstore.gpo.gov

Botanical Death for Community Improvement

It's hard to kill a tree, no matter how it disrupts the dreamed-of forest or grassland. There are giant eucalyptus out West that citizens will defend with unmuted passion. Big trees are somehow special, sacred—even if they harm the soil or nurture no other species. It's a means-to-ends issue (the goal being a more ecologically linked and supportive community), but hard, since this generation may never live to see the new forest. —PW



DOWN...

UP...

...OUT.

Root Jack at work.

Root Jack

\$95.95 from Michael
Giacomini
PO Box 726
Ross, CA 94957
415/454-0849

Weed Wrench

\$54 to \$148 from New Tribe, Inc.
5517 Riverbanks Road
Grants Pass, OR 97527
541/476-9492,
newtribe@cdsnet.net

Two tools to ease backbreaking work. Both extract the unwanted bush or shrub by pinching the root and leveraging out the plant. Michael Giacomini, inventor, came by the office and left us a Root Jack. I jack out French broom outside our office during lunchtimes.

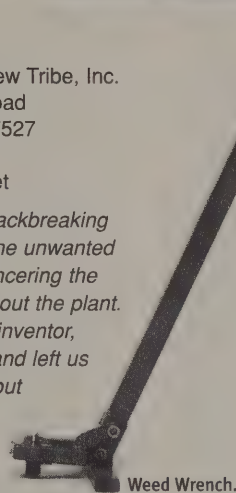
The Root Jack has a steel hoe-like blade that helps clear litter so you can find a good stem on which to jab the pincers. It's a one-size-fits-all (up to 1.5" in diameter) and a workout for the wrist. You do it standing up.

Weed Wrench comes in four sizes for 1–2.5" stems. The mini requires sitting and squatting. The maxi requires tallness and good muscles. Wherever you go, among aggressive banana puka on Molokai, Brazilian pepper trees in the Everglades, or French broom in California, you'll encounter weed wrenchers at work. —PW

Ringer Tree Girdler

About \$150 from Forestry Suppliers
(see page 31)

The alternative to herbicides for offing unwanted trees. Slices quickly through bark and cambium, deep enough to kill. Remember to ask forgiveness or say a little prayer. —PW

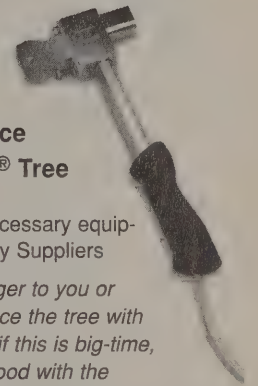


Weed Wrench.

E-Z-Ject® Lance Hypo-Hatchet® Tree Injector

For prices and necessary equipment, see Forestry Suppliers

No herbicide danger to you or other critters. Lance the tree with your E-Z-Ject or, if this is big-time, hatchet the sapwood with the Hypo-Hatchet tree injector. Both release herbicide into the unwanted tree. For amine herbicides only. —PW



Plateau™ (Imazapic)

RoundUp® (Glyphosate)
Plateau from BASF, www.basf.com
RoundUp from Monsanto,
www.monsanto.com

Tom Barnes of the University of Kentucky convinced us (he sent us a pile of reprints) that there's a place for herbicides in restoration. By combining herbicides with seed equipment, he's been able to reduce or eliminate tall fescue grassland and replace it with native grasses in one to two years. The imported tall fescue, formerly promoted by the feds, now covers 34 million acres. Bobwhite and cottontail populations have plummeted in tall fescue. Songbirds and Canada geese become deprived of nutrients. Tall fescue grasslands can be seen as a “cancer,” and a drastic disease of the landscape requires drastic measures. —PW

Cat Fights

I grew up with cats who moved between indoors and outdoors at will. We lost some to cars, some got sick, others just disappeared. Cat litter made full-time indoor feline living an option. We keep ours inside all the time, neutered and vaccinated in case they get out (Salvador made a run for it during our last earthquake).

The always-indoors option has forced cat keepers to confront a dispute as hot (among cat lovers) as gun control. One side sees free-roaming cats as individual sentient beings, misunderstood and unfairly maligned, deserving respect and care. Another side sees wretched, disease-prone killing machines, endangering human health and cutting a swath through wildlife populations.

The dispute is big. Most cat counters estimate about 60 million "pet" cats in the US. One third (20 million) stay indoors; the rest are indoor/outdoor commuters. Another 60 million are strays (abandoned or lost) or feral (descendants of strays). That would make one *Felis domesticus* for every two *Homo sapiens* in the country.

"Cats, whether owned, stray, or feral, should not roam free!" says The American Bird Conservancy. Its Cats Indoors! program (see access) estimates that free-roaming domestic cats kill hundreds of millions of birds each year.

On the other paw, Alley Cat Allies (ACA; see access) counters that such



numbers are extrapolations from very limited data. ACA claims that feral cats mostly scavenge and hunt rodents; that the real enemies of wild bird populations are habitat fragmentation and pesticide use.

Indoors-only advocates argue that cats can catch (and sometimes transmit to humans) rabies, distemper, toxoplasmosis, and a host of other diseases. Roaming cats can clearly become neighborhood nuisances, hunting at the next-door bird feeder, digging up and doing it in gardens, and singing love songs into the night.

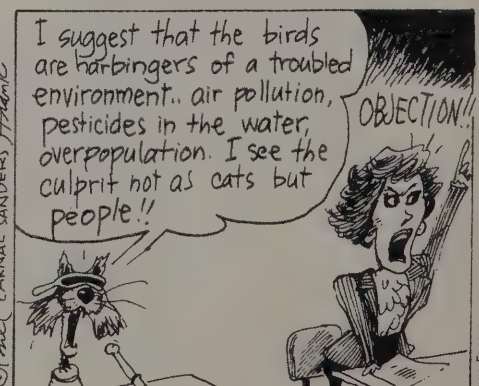
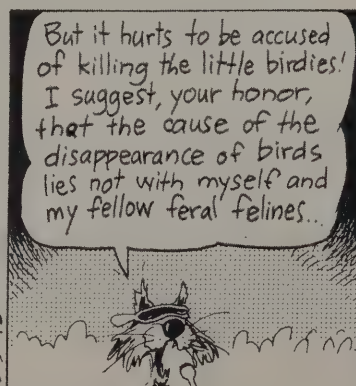
Recommending indoor living may be reasonable for pet cats, but what to do about the 60 million homeless? Organizations agree that their numbers should be reduced, and, when possible, they should be trapped, neutered, vaccinated, and placed in good homes. The fur flies over otherwise healthy cats deemed too "feral"

to be placed. Two options polarize the cat-concerned: (1) trap, neuter, and release cats into 'managed colonies'; or (2) eliminate colonies in a humane manner (a euphemism for another euphemism, euthanization).

ACA advocates Trap-Neuter-Return (TNR) as the most humane and effective strategy. Outside the Whole Earth office, Wendy, a local resident, stewards a feral colony of ten to twenty. Her yodel calls her feline friends from low tree branches, the abandoned greenhouse, under the porch, and who knows where. She watches for new arrivals, which she catches, has neutered, and returns to the site.

TNR champions hope that, sans reproduction, colonies will wither through attrition. Opponents argue that colonies don't die out. Instead, new feral cats move in for the free food, which also attracts other predators and disease carriers. Colony stewards may get overwhelmed or move and abandon the colonies. And well-fed altered cats still kill birds and other wildlife.

Both sides marshal "experts"—animal control officers, veterinarians, researchers. Hissing and caterwauling are intense. TNR opponents say that feral cats lead "short, miserable lives." The San Francisco SPCA replies that feral cats often live long, healthy lives, especially when neutered and less inclined to fight. Besides, they add, "We don't think death is better than a less-than-perfect life. Many [other] animals...face similar hazards...yet we would never



consider euthanizing them 'for their own good.'"

"Indoors or outdoors?" is more than a personal preference question; Outdoor cats are part of the neighborhood's ecology. And the whole community has a stake when shelters, animal-control agencies, or governments mandate registration or feral cat eradication. It's a fight in which we all need to choose. —MKS

WE thanks reader Maja Ramirez for sending us her article, "Get Cats Indoors," which was too long to use, but alerted us to this issue.

Cat Fight Access

Cats Indoors!

American Bird Conservatory
1250 24th Street NW, Suite 400
Washington, DC 20037
202/452-1535, www.abcbirds.org/catsindoors.htm

A wealth of education materials, information for cat-ordinance campaigns, and advice on keeping indoor cats happy.

Alley Cat Allies (ACA)

1801 Belmont Road NW, Suite 201
Washington, DC, 20009
202/667-3630, www.alleycat.org
Access to humane traps, free or low-cost spay/neuter clinics, regional cat-rescue

organizations, and videos and other material for making the TNR case to public policymakers.

Maddie's Fund

2223 Santa Clara Avenue, Suite B
Alameda, CA 94501
510/337-8989, www.maddiesfund.org
Maddie's Fund is trying to build a no-kill nation and guarantee a loving home for all healthy dogs and cats. It offers grants to no-kill shelters that work with veterinarians, rescue groups, traditional shelters, and animal control agencies nationwide. For a list of no-kill shelters, see www.cherishedmoments.com/no-kill-animal-shelters-statelist.htm.

Repelling Bambi

There are now more deer than people in Georgia. In Alabama, you must shoot a doe before you wangle a buck permit. In forests and parks, native wildflowers and shrubs disappear. So many deer nibble so many seedlings that in-soil seed supplies dwindle out. A few forests have collapsed. In nurseries, special sections feature plants deer hate.

Control is out of control. You can't shoot deer near homes. Deer birth-control injections require too much human labor. Shooting bucks doesn't slow down doe pregnancies. Deer relocation? To where? Gardeners seek vegetable security behind ugly eight-foot-high steel fences or electric wiring.

So here's what we know about deer repellents. (We welcome reports from readers on what works or not).

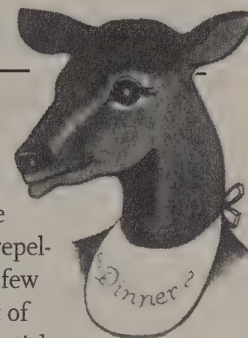
Weekly spraying works best. Rockland Hinder is the "best buy" spray recommended by *Consumer Reports*. We've heard good things about Deer Away, which is based on putrescent egg solids (a bad smell and taste to deer, but not to humans).

If you're willing to spray every third day, try a homemade concoction of garlic, red pepper, and old eggs. Remember: new shoots, which are the tastiest, are not protected by last week's spraying. Don't buy the claims that various commercial spray deterrents last for two to four months. It can happen, but not as often as claimed.

Stockings filled with folk repellents like human hair or composted municipal sludge work a little, sometimes. But deer catch on. Homemade stockings with soap bars, commercial

sachets like Repel Bye Deer, or garlic/chilli repellent sticks work for a few weeks. You need a lot of sachets, stockings, or sticks because they are only repulsive at distances of a few feet. Make sure the soap is tallow-based, (not petrochemical) like Camay or Irish Spring. Most researchers say it's the tallow's fatty acids, not the scents, that disgust deer. Ah, the food web! Other critters may love tallow fatty acids and steal your stockings.

I used to procure lion pee from the San Francisco zoo. It worked great, but the supply is hard to get. Peaceful Valley supplies farmed coyote piss and a glandular lion extract. We couldn't track down how these predators are "milked" and cared for. —PW (research by Nicole Parizeau)



Bambi Repellents

Rockland Hinder

At garden supply stores
Essentially tallow fatty acids in a spray form, applied to leaves. Safe for edibles.

Deer-Off®

\$9.99 for 16 oz. ready-to-use spray bottle. 800/deer-off, www.deeroff.com; Ben Meadows or Forestry Suppliers (see page 31)

Spray of putrescent whole egg solids, capsaicin, and garlic. Can be used on edibles. Claims to be "weather resistant."

Repel Bye Deer Sachet

\$9.95 each from Park Seed Company
800/213-0076, www.parkseed.com
Soap based, oil scented, "guaranteed to last all season."

Deer Away®

\$13.95 for 1/2-gallon liquid or 8 oz. powder from Peaceful Valley (see page 31).
Not for edible crops.

Deer Fencing

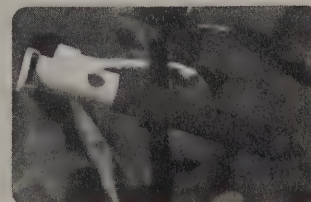
\$279 for 7.5' x 330' from Peaceful Valley
Black plastic, with 2-1/4" x 2-3/4" mesh. Lightweight, designed to last 7-10 years.

National Scent Deer Repellent

\$5.95 for 4 oz. from Peaceful Valley
Glandular lion extract. We don't know ethics of extraction method. Applied by sprayer.

Pro-Tec Garlic Repellent Sticks

Pack of 250
about \$80 (barrier displacement probe, \$1.10) from Forestry Suppliers



The Chicago Controversy

by **Alf Siewers**

How did it all happen? How did what a few thousand volunteers in the Chicago area saw as a positive, nonconfrontational, grassroots movement find itself painted as a conspiracy involving big government and allegedly secretive environmental organizations—as if black helicopters might be sighted over the forest preserves any day?

They are frying baby rabbits and baby birds right where they stand, because they think that they need to cleanse these lands of everything. —Cindy Erickson, director of Voices for Wildlife, on a WGN-AM Radio call-in show, June 14, 1996.

God made these nonnative plants and trees, just as surely as he made the Oak. —Chicago-area anti-restoration flyer.

... “good” and “bad” trees remind...me of an old *Far Side* cartoon, where a salad is shown holding a gun on a quart of milk. The caption: “When potato salad goes bad.” Good trees? Bad trees? Come again? —Mark Spreyer, naturalist, *Barrington (IL) Courier-Review*, Jan. 2, 1997.

...this minority of tree-hugging preservationists has managed to halt all of the world-renowned ecological restoration projects that have been under way for twenty years...skidding to a stop under orders of blindly flailing, panicked politicians who have no idea what they are doing... —John Husar, outdoors writer, *Chicago Tribune*, Jan. 9, 1997.

Dave Eubanks, a volunteer steward of a restoration site in the Cook County Forest Preserve District, woke up on June 4, 1996 to find his restoration work the target of a scathing newspaper attack by *Chicago Sun-Times* columnist Raymond R. Coffey, as part of a series of articles and columns labeling local restoration efforts as a secretive plan to deforest Chicago's beloved forest preserves.

Coffey hit plans by Eubanks and restorationists to turn their two-

hectare (five-acre) neighborhood site, which included a picnic grove and recreation field, into a preserve with prairie. Coffey wrote that recreational use of the preserves was threatened, along with the trees that were being cut, for the sake of an elitist restoration program being run by The Nature Conservancy, a private environmental group.

Eubanks, at the time an employee of the city's environmental department, found himself in the eye of a political maelstrom. As painted in the

newspaper, the usually mild-mannered Eubanks had now become an agent provocateur of a conspiracy by an international environmental group to denude local preserves of their trees, all for an unproven and unscientific theory called “restoration.”

The irony was that, just a few weeks prior to this, a new consortium of environmental groups called Chicago Wilderness, representing a broad spectrum of major institutional players in the Chicago-area environmental scene, had been announced with great fanfare. A prime goal of the group was to support restoration. A portent of trouble to come, however, was criticism of the plan in a John Birch Society publication, which painted it as part of an effort to supplant local governments with bioregional councils across the United States that would be under the jurisdiction of the United Nations Trusteeship Council.

Eubanks, more concerned with local press coverage of his stewardship site, suddenly also had fears about losing his job in the controversy-shy Daley administration at Chicago's City Hall. To him, the brouhaha all seemed ridiculous. He had started up the project and worked long hours on it with neighbors in order to help bring back



Savanna without Fire

Original savanna. Here is one sequence of what happens without fire or other restoration activities. In 1800, the savanna looked like it probably looked 5,000 years ago. It had probably spent some time as prairie and as savanna, depending on drought and fire.

native plant species, build a nature trail, and create a more beautiful preserve in an area disrupted by flood-control-related construction. He was being helped by forty home-school children from the area, whose science curriculum included helping out at this local restoration project.

Yet not long after the article appeared, Eubanks found himself (along with other restorationists in the area) prohibited by order of the county board from doing any restoration work. More than a year later, Eubanks's neighborhood was one of a handful where the ban remained in place.

"Now things are going back to the way they were before the project was started," said a controversy-weary Eubanks, who has since left his job with the city to start his own environmental consulting firm, but who still attends community meetings, speaking out for a lifting of the ban on cutting, burning, and essentially any work on the nearby land, which is a combination of meadow and woods. "Garbage is out there again, illegal four-wheel drive vehicles are running their wheels through the area...and the kids can't pursue their science project."

Although the moratorium on restoration work has been lifted in most of the Chicago area, following a series of heated public hearings, stricter regulations of the work were put in place, especially in Cook County, where Eubanks's neighborhood



1890 pasture. The site had been used as a pasture for fifty years. Cows acted somewhat like fire, keeping the brush down. But the edibles—savanna herbs—and the butterflies that used them now lived only in the right-of-way. The right-of-way remained ungrazed and erratically burned from sparks from adjacent railroad tracks.

remains under the ban. More importantly, says Eubanks, the restoration movement temporarily lost momentum just at the point at which it seemed to have really been picking up steam.

How, he still asks himself, did it all happen? How did what he and a few thousand other volunteers in the Chicago area saw as a positive, non-confrontational, grassroots movement, find itself painted as a conspiracy involving big government and allegedly secretive environmental organizations—as if black helicopters might be sighted over the forest preserves any day?

Roots

The political roots can be traced to friction between restorationists and animal-rights activists. Restorationists expressed support for forest-preserve policies of reducing deer populations by tactics that included rocket-netting, in which rocket-powered nets were used to trap deer, which were then shot at point-blank range, on the spot.

At this point, the two sides cannot even agree on a description of their respective positions in that earlier debate. Restorationists saw a surplus population of deer, lacking natural predators in Chicago and its suburbs, stripping restoration sites of rare native flowers and young oaks. One leading restorationist has said his side supported policies aimed at

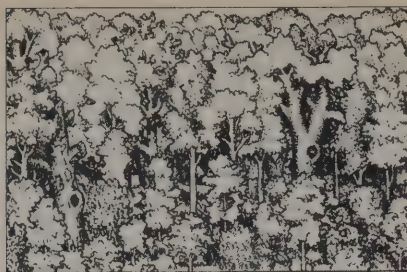


1980 "preserve." The site was acquired as a preserve in 1960, at a time when the role of fire was little understood. The native flora and fauna began to recover from 140 years of grazing, entering from the right-of-way, but brush also invaded at the same time.

reducing the deer population, not any specific technique such as rocket-netting, while alleging that animal-rights activists opposed killing deer generally. One leading animal-rights activist has said that her side was only objecting specifically to rocket-netting as inhumane, alleging that the practice had been supported by the restorationists.

Partly as a result of the testimony of restorationists at a hearing on deer killing, and the presence of restorationist Stephen Packard of the Illinois Nature Conservancy on a Lake County preserves animal control committee, the animal-rights activists came to identify deer-killing policies with the restoration movement. To them, restorationists were removing brush used for food and cover by the deer, and now were also supporting removal of the deer. Restorationists argued that they were working for a habitat that would be healthier for future deer populations. But a small group of animal-rights activists came to see the killing of trees and the killing of deer as linked.

When the Chicago Wilderness project and related plans for large-scale restoration projects were announced with a blaze of publicity in the spring of 1996, they also helped provide fuel for the controversy to come. News reports included references to official plans to restore 80 percent of the Cook County Forest Preserves; this was interpreted (or rather misinterpreted) by critics of



"2010 preserve." The understory herbs have been shaded out. Most original plants and animals are gone. Unlike the original forest, there is little diversity. The predominant species are common aggressive species. Restoration work is needed!



Savanna with Restoration

1981: Restoring the savanna preserve. To avoid ending with the "2010 preserve" of the savanna without fire, restorationists managed a burn in the fall and girdled disruptive tree species (many aggressively invasive or without foodweb links).



1983: Intensive restoration. Irrupting weeds and brush were aggressively controlled by herbicides, fire, and manual labor. Native prairie seeds were collected nearby and sown.

restoration to mean that 80 percent of the mainly forested preserves would be turned into prairie. In actual fact, what was meant was that 80 percent of the preserves would be managed as natural areas, using restoration principles to achieve a healthier mix of degraded native woodland, oak savanna, prairie, and wetland.

Management plans for Cook County Forest Preserve lands overall were still in the early stages of development, and the lack of comprehensive, detailed plans created a gap which encouraged fearful rumors by critics about clear-cutting of forest groves to restore prairies. This, moreover, made the Cook County district vulnerable to criticism that it had in effect turned over management of the preserves to a private venture—namely The Nature Conservancy's Volunteer Stewardship Network—which had its own agenda and was providing much of the workforce and impetus for the restoration work.

Animal-rights activists helped trigger Coffey's anti-restoration newspaper crusade, which in turn provided the linchpin for joining the animal-rights activists with the other key group in the controversy, namely residents of an exclusive residential neighborhood on Chicago's Northwest Side that, nestled amid preserves, is one of the most politically clout-heavy neighborhoods in a city dominated by intense community politics.

Some residents in that mainly white enclave, especially in the Edgebrook neighborhood, had been concerned about what they perceived to be a deliberate thinning of local woods that provided them with privacy from the rest of the city, and about the presence of "outsiders" in neighborhood woods. Some residents who live near preserves began to object to the application of herbicides and the use of controlled burns as part of restoration efforts, seeing both as potentially dangerous in an urbanized area. The community was one in which many current or former city employees lived. The current Mayor Daley's brother William, then US Secretary of Commerce, lived nearby. Another Daley sibling, John, was in charge of the finances of the county government that controlled the preserves. The highly interconnected world of Chicago's conservative political establishment was extremely influential in the area. And this establishment, political world is the home base of Coffey, a long-time Chicago journalist.

The Cook County Board, a virtually invisible body of elected officials whose majority seems essentially to serve at the bidding of the above mentioned local elites, was frightened by Coffey's media spotlight, by pressure from the Chicago City Council, which was responding to well-connected neighbors of the preserve, and by several obdurate members in its own midst.

Another well-orchestrated network, much more politically important than the animal-rights groups, thus became energized against restoration, but somewhat ironically in the role of a grassroots movement aimed at an "elitist" restoration conspiracy.

Further complicating the situation was the impact of the book *Miracle Under the Oaks* by New York Times science writer Bill Stevens, published the year before the controversy erupted, which highlighted the charismatic Stephen Packard, key motivator and theoretician of the region's volunteer restoration efforts. The book cast Packard, a Harvard-educated, former anti-Vietnam War organizer, as a kind of environmental celebrity. It was in some ways an unintentional set-up for a fall. Packard's visionary genius and the recently hailed success of his efforts had attracted their share of resentment. His willingness to support county animal-control policies and his openness in speaking to Stevens of the early concerns and tactics of restorationists provided critics of the projects with a text for a target and a scapegoat—namely Packard himself.

Stevens's accounts of restoration techniques in the late 1970s and early 1980s provided opponents with ammunition related to the way the work was being carried out. It told of how, in the early days of the program, strips of greenery were left to screen restored sites from view to avoid



1990: Restoration "completed." As long as exotics and brush did not reinvade, managed fire became all the additional work that was needed.



2010: "Nature on its own." Though different from "original 1800" savanna, this patch contains most of the species present earlier.



Collecting and sorting seeds for prairie restoration.

complaints from the public or officials. While restorationists have since said that these accounts were misleading, the two or three brief references to such practices were quickly amplified in support of the conspiracy theory that had gained credence among the general public as a result of Coffey's newspaper reports and official reactions to the controversy.

The restorationists' vision of a new scientific paradigm, best articulated by Packard, seemed a non-understandable language in the context of the neighborhood power-broking speech more familiar to principals such as Coffey and Cook County Board President John Stroger. On the streets the image of the conflict was a typically wry Chicago newspaper-wars impression: A forest preserve district cutting down its forests.

Next Time

Looking back on the controversy, Dave Eubanks says that he can see things that restorationists could have done better before the controversy hit. Specifically, he recalls when volunteers started burning his site in 1994 and he wanted to notify neighbors individually. As he remembers it, more experienced hands from the Volunteer Stewardship Network told him that wouldn't be necessary—that it would be enough just to hand out information sheets to people who came up to ask about what was going on during a burn. Skeptical of this, Eubanks engaged in an ongoing

effort to keep his neighbors informed. He appeared before his local community organization at a meeting marked by what he called "near hysteria" after Coffey's first column. The result has been that the neighborhood association where Eubanks lives has supported the restoration work, despite opposition from community groups in nearby neighborhoods.

Restorationists often tried to reach out to community groups and garden clubs around the Chicago region prior to the controversy. In Eubanks's view, it's the Forest Preserve District that should be responsible for notifying and educating neighbors about burns and other restoration practices, especially since officials are benefiting from free volunteer labor. But there again, preserve officials say their resources are limited as well, although official outreach efforts have been increased. One result of the controversy has been the creation of more rigid guidelines for supervision of volunteer activity—guidelines restorationists see as bureaucratically cumbersome.

"Better communication with neighboring residents," Eubanks said, is the real lesson. This encompasses several important points that can be viewed as a cluster.

1. Be a real grassroots movement.

Restorationists around the

country might well ponder how, in Chicago, their movement (despite the fact that it represented some 5,000 volunteers, probably a larger constituency than that of its opponents) became effectively painted for a time as a kind of elitist "alien" conspiracy. Though the effort had grown up as a grassroots effort, it has also developed links that made it vulnerable to criticism. For example, restorationists found themselves championing acronymed governmental programs, and being defended by the Monsanto Corporation for their use of herbicides. This illustrated the dangers of trying too hard to meld environmental efforts with mainstream institutional networks, a common strategy of environmentalism in recent years.

In the Chicago area, The Nature Conservancy's Stewardship Network is a grassroots movement, but the restoration effort has in recent years relied heavily upon networking with institutions such as the Field Museum and government agencies, a complex of partnerships that was made explicit—and widely publicized—by the Chicago Wilderness initiative. Relying on corporate support, such as in one case riverboat casino donations for a Chicago youth education program, may be necessary, but restorationists also need to assess continually the risk of becoming too closely identified with powerful institutions as opposed to people.



Prairie quality can be evaluated by the mix of original species, exotic species, and species that are native but evade and resist cattle grazing. Top: Original pasture showing 20+ species per square meter, including cow-sensitive white prairie clover, prairie dropseed, and prairie gentian. Middle: Grazing has eliminated the tastier species. Grazing-tolerant species and grazing-adapted species from Europe predominate. About 5 to 15 species per meter, including Indian grass and ironweed (original) and exotics timothy and white sweet clover. Bottom: A low quality "restoration" or "rehabilitation" with only 5 species per square meter. Exotics are gone, but only a few natives have taken hold: big bluestem, Indian grass, bush clover and compass plant.

2. Build an institutional framework.

The Chicago controversy has highlighted the lack of institutional networks to educate the public about restoration, thereby reducing the likelihood of public attacks, and, at the same time, being prepared to respond intelligently to such attacks.

Astute environmentalists rightly faulted the Cook County Forest Preserve District for being too weak in its pre-controversy public relations work regarding restoration. They also pointed out that The Nature Conservancy did not come forward strongly enough on the side of restoration once the controversy had begun. Universities, while nationally gradually increasing their commitment to restoration, also failed to provide an effective basis for countering the critics. In fact, a few isolated academics who were critical of restoration techniques in the Chicago area became expert witnesses for the opposition.

Authoritative responses to the restoration controversy by the heads of institutions in the consortium were valuable, but their texts often lacked the passion, personal involvement, and media appeal that characterized those of the critics. The place where that passion appeared effectively on the side of restoration was in the testimony of rank-and-file stewards and volunteers at a series of Cook County public hearings on the issue, speaking not as "expert" allies of government agencies but as citizen scientists.

3. Develop a widely shared restoration ethic that doesn't reflect the scientific ethic.

Animal-rights activists and restorationists share a respect for life and a concern for nature; evangelical Christians and environmentalists both profess a devotion to life-affirming values; and, in Chicago, both critics and supporters of restoration

share a love for the region's forest preserves. Likewise, both conservatives and liberals in America share a respect for grassroots volunteerism, for the kind of "public-private partnership" that restoration often exemplifies. But often these parties view one another with deep suspicion, and cite fissures between them that lead to conflict over restoration. At both the philosophical and the practical levels, restorationists have the opportunity to shape an ethic that can inspire a unifying cultural movement.

In some ways, an implicit hostility toward mainstream religion in United States environmentalism is reflective of an older and more mechanical sense of science that was in turn a reaction to earlier forms of conventional Western religion. Today, a new synthesis of religion and science is possible in the kind of cosmology implicit in restoration work, focusing as it does on the active interrelationship between humans and nature. For example, a winter solstice bonfire at the Somme Woods restoration site north of Chicago (where Steve Packard is steward) featured a saxophonist leading a procession of celebrants to the bonfire, where the program included both music and words from a local Episcopal priest. On a theological level, the concept of pantheism found in Eastern Orthodox theology—the mystical sense of God as both in all and over all—has been used by some writers as a bridge between traditional Christianity and ecological concerns. The accompanying doctrine of synergy highlights cooperation between human and divine wills, a cosmic sense of the role of humanity in nature.

We must remember, however, that restoration is not conventional Western science, and its healing is not the battlefield intervention of an imperialistic Western medicine. Even the use of terms such as "alien" or "exotic" to describe "bad plants," as Packard and others have pointed out in the past, should be reexamined thoughtfully as perhaps expressing

We must remember that restoration is not conventional Western science, and its healing is not the battlefield intervention of an imperialistic Western medicine.

the dark side of conventional Western perspectives on nature.

Native Americans' attitudes toward the need for grateful recognition of slain plants and animals can inform restoration more than a mechanistic, biomedical ethic of species cleansing. Such recognition doesn't have to be cast in neo-pagan terms, exclusive of Judeo-Christian traditions.

4. Develop culturally grounded rites as part of restoration.

The recent resumption of a solstice brush-bonfire celebration at Somme Woods illustrates how the recognition of restoration as an art and a cultural activity can strengthen restorationists as a community, while at the same time consolidating their role within the larger society. The more restoration becomes a part of the discourse and dialogue of the arts, the more it will find new supporting networks of constituencies and also enter into popular culture.

5. Restore a sense of place that includes human community.

One of the most valuable assets of the restoration movement in the Chicago area is Somme Woods. A neighborly walk through Somme's beauty is an aesthetic argument for restoration that is more powerful than any clinical explanation support-

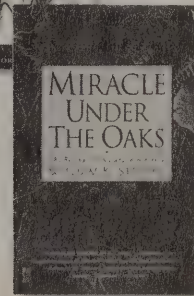
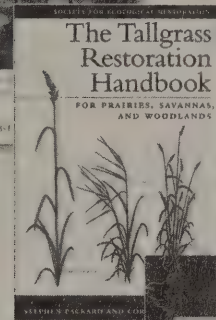
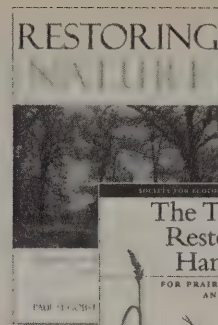
ing restoration or any philosophical argument against it.

The work of Dave Eubanks with his neighborhood association illustrates the importance (known to many stewards) of working with and including neighbors of restoration projects in development and implementation of the vision—an effort that Chicago restorationists did pursue to some extent throughout the region, and are reemphasizing with success now.

6. Celebrate success.

Restorationists tend to be an introspective lot, prone to self-examination. Sometimes, in dealing with ourselves and the public, it's good just to recognize what a marvel this movement is, faults aside. This is especially true of the movement in Chicago, where the real news is that, as the smoke of battle clears, it still thrives.

Alf Siewers kindly allowed us to excerpt this article from the Summer 1998 *Restoration and Management Notes* (now *Ecological Restoration*; see page 34). The complete article includes much additional interesting material. Alf reported on the restoration movement for the *Chicago Sun-Times*. He directs the Radio Yeats theater project, writes on environmental issues, and is pursuing graduate studies in culture/landscape relations (with an emphasis in medieval literature) at the University of Illinois.



Restoring Nature Perspectives from the Social Sciences and Humanities

Paul H. Gobster and R. Bruce Hill, eds.
2000; 321 pp. \$25. Island Press

The Tallgrass Restoration Handbook

For Prairies, Savanna, and Woodlands
Stephen Packard and Cornelia F. Mutel,
eds. 1997; 463 pp. \$25. Island Press

Miracle Under the Oaks

William K. Stevens. 1996; 352 pp. \$12.
Pocket Books

The trio for prairie place making and peacemaking. Since the prairies, along with the Pacific Northwest, have been the source of so much understanding, these books are for those who wish to avoid quicksands and whitewater, and to navigate with intelligent hearts. Miracle is the well-written story of Steve Packard and the glorious rise of prairie restoration around Chicago. Restoring Nature is the first social analysis of the restoration movement, using Chicago as the springboard for many important philosophical, anthropological, and political reflections. Largely academic prose but very readable. The Tallgrass Handbook is the how-to-do-it classic of terrestrial rehab and species-mix restoration. —PW

Wilderness and the Hyperreal

Faking nature? So what? Isn't human intervention the best path to the sacred and preservation?

Right: The Old Man of the Mountain's famous profile. Arrow points to restorers and preservers of his granite visage.

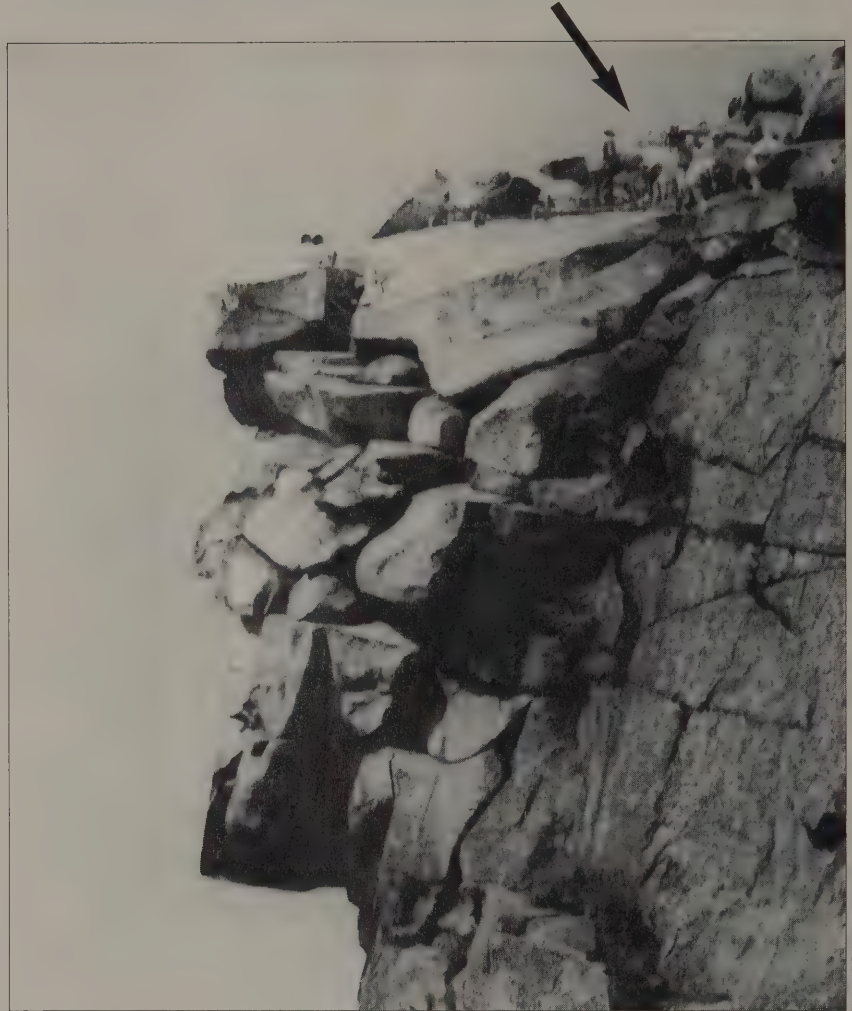
A stack of craggy red Conway granite ledges, sculpted by frost heaves and glacial retreat, overlooks Profile Lake in New Hampshire's White Mountains. If you stand in just the right place, the rock formation conjures the image of a regal-looking man with a sharp nose and pointed beard.

Each year, five to six million visitors gaze at the rock face. The image ripples throughout the state and the virtual world. It appears on license plates, tourist brochures, Web sites, in a story by Hawthorne, in a poem by Daniel Webster, and in a painting by regional artist Isaac Sprague. A museum collects Old Man of the Mountain kitsch, displays its history, and sells memorabilia.

There's only one problem. The rock formation is no more natural than the faces of presidents at Mt. Rushmore. As early as 1915, preservationists adjusted cables and turnbuckles to keep slabs from slipping and distorting the Old Man's profile. Later, they sprayed bleach on his blemishes caused by lichen growth; filled unsightly "skin" cracks with epoxy, wire, and fiberglass; and studied upcoming needs for future facials by measuring what frost, gravity, and acid rain have done to his nose, forehead, and chin.

The Old Man joins peculiarly modern phenomena like the badlands of Disneyland or the duplicate of the Lascaux caves, where faked nature is as meaningful as nature itself. Scratch a Disney badland, and the chicken wire and plaster infrastructure reveals itself. Eviscerate a Disney hippo and it's all plastic, gears, and wire.

Jean Baudrillard, a French



NIELS F.F. NIELSEN, JR.

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"Restoring Nature in American Culture: An Environmental Aesthetic Perspective." Cheryl Foster. In *Restoring Nature* (see page 52).

Simulations and Simulacra. Jean Baudrillard. 1994; 164 pp. \$14.80 University of Michigan Press.

philosopher, drove across the American desert in the late 1980s (he's French and didn't notice that there are actually five distinct deserts, but that's another story). He had coined "hyperreal" to characterize how certain places simulate the "real" and can, in fact, replace it by offering apparently identical sensuous and enjoyable feelings of the beautiful and the curious. He witnessed America pinballing its psyche between the illusions of primeval wilderness and the hyperreal. The simulacra—be it Las Vegas or the Old Man of the Mountain—con-

tained no deep time or history, no accumulation of cultural shapes and forms. The hyperreal replaced the authentic with an artifactual surface, taken by all as the real. Elitists (but not Baudrillard who likes the hyperreal) sniveled.

Are all our future landscapes headed for the hyperreal? Does faking nature matter? At what point does constructing an exacting model of the real, like Disney's badlands, equal the technological preservation of what was once a natural phenomenon, like the Old Man? Cheryl Foster, a University of Rhode Island prof,

answered Baudrillard with a more complex and sympathetic essay on American techno-natural simulations. (What follows is my interpretation, but Prof. Foster deserves great credit for her thoughts.)

We are a young nation. The Old Man has been promoted for about 160 years, and restored for about

the hyperreal to the sacred.

Already, the eclectic melange of the American pilgrimage has form. Families and seekers, once in their lifetimes, “must” see wilderness and techno-wonders—Old Faithful in Yellowstone, Las Vegas, El Capitan in Yosemite, Disneyland, the Grand Canyon. It’s a petro-based pilgrim-

parallel Euro-American sense of the divine? According to one writer, the Abenaki allegedly “perceived [the Old Man] as a great omen, the valley under the stone became a peaceful gathering place for sacred tribal ceremonies and festivals, where all weapons were left behind...”

In his corny poem, Daniel Webster overlaps their respect: “Men hang out their signs indicative of their respective trades. / Shoemakers hang out a gigantic shoe; / jewelers a monster watch; / even a dentist hangs out a gold tooth; / but up in the Franconia Mountains God Almighty / has hung out a sign to show that in New England, He makes men.”

Today, with ecological explanation reinforcing the spiritual, a description of the 6,000- to 17,000-year history of the Old Man, whose visage was “completed during the latter part of the post-glacial period,” adds a sense of eternity and implies a kind of inevitable destiny to the mountain (see mutha.com/oldmanmt.html).

Another item on the hyperreal checklist is reference to superheroes (as in Las Vegas to movie stars *who were here*). At the Old Man, the cross-generational story of the Nielsen family, who have performed the restoration since 1960, is woven with the “service” of volunteers and the risks from rock climbing. A semi-hereditary priesthood, selfless actions, and seasonal rituals are tentatively being born.

The powwow conversing about “untouchable” wilderness, the artifact of simulations, and the limbo-places in between is healthy and, we hope, will never end. Wilderness advocates and restorationists need to relish how time and unique landscape imagery entice humans into a care for nature; how devotion to a cared-for heap of glacial rocks recasts the rocks as an animated and even animist locale. With desire comes the energy to secure a place as sacred. And once sacred, its longevity (except for wars and revolutions) has been ensured.

—PW

Left: The Nielsen family, along with a group of volunteers, work to keep the Old Man of the Mountain's profile intact.



NIELS F.F. NIELSEN, JR.

eighty-five. The Old Man has begun to move from its patriotic/tourist/secular/commercial presence to a status as a special place that must be visited by travelers as part of a secular pilgrimage. Its scenic view nudges toward becoming a sacred place; tourist itineraries slip into pilgrimage routes “required” to be visited by families and seekers; souvenirs, postcards, and miniatures edge their way toward good-luck pieces, amulets, and sacred images pasted into photo albums. It’s all embryological, and who knows if and how the US (or the world) will flow from the natural to

age. It’s democratic in the sense that any approach, by hitching or Lear jet, with audio tours or on backcountry overnights, is equal. As in India, pilgrimages are for rich and poor, whoever is willing to make offerings and sacrifice. Americans’ sacrifices are real and financial. Their offerings have yet to be defined and remain an obstacle to completing the transition from hyperreal to sacred. Perhaps restoration work is the offering.

Here are a couple road signs for the hyperreal. First, does the locale reference Native American respect and then complement it with a

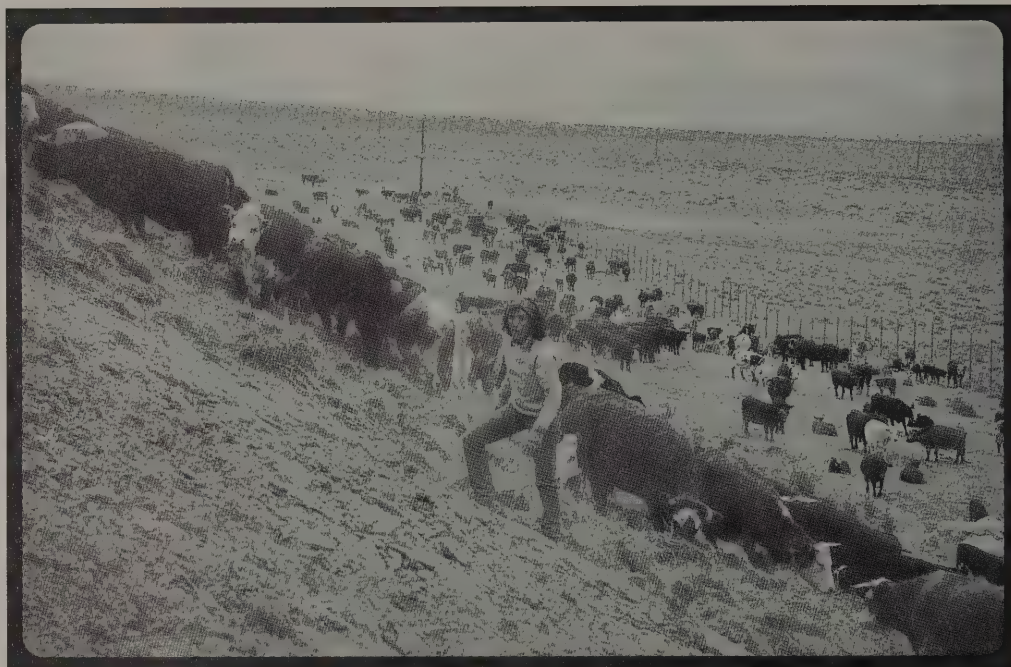
Ranching Back To Nature

a Photo Essay on Creative Cows

by Dan Dagget

The Tiptons broadcast > a mixture of seeds over the ten-acre site, and then spread 32 tons of hay to coax 600 head of cattle onto the waste-pile slope. The cattle ate some of the hay and stomped the rest, along with their manure and urine, into the clay.

The Tiptons enticed the cattle with edible goodies to get them where they wanted them. When there is not much else to eat, plain old hay works well enough. Enticement, workable soils, and gentle slopes have kept the Tiptons' task cheap (at \$400/acre), although they have undercharged in some cases, just covering expenses, to make a point.



TOMMIE MARTIN

The new West remains fouled by mine tailings, construction site damage, mud slides, burns where soils are sterile from very hot fires, ORV damage, desertified rangelands (including desertified meadows and riparian areas), abandoned and closed roads, severe channel erosion, noxious plant infestations, and overgrazing. To everyone's amazement, herds of cattle may provide the most effective means to return these wastelands to any sort of condition that can be called "natural" or "healthy."

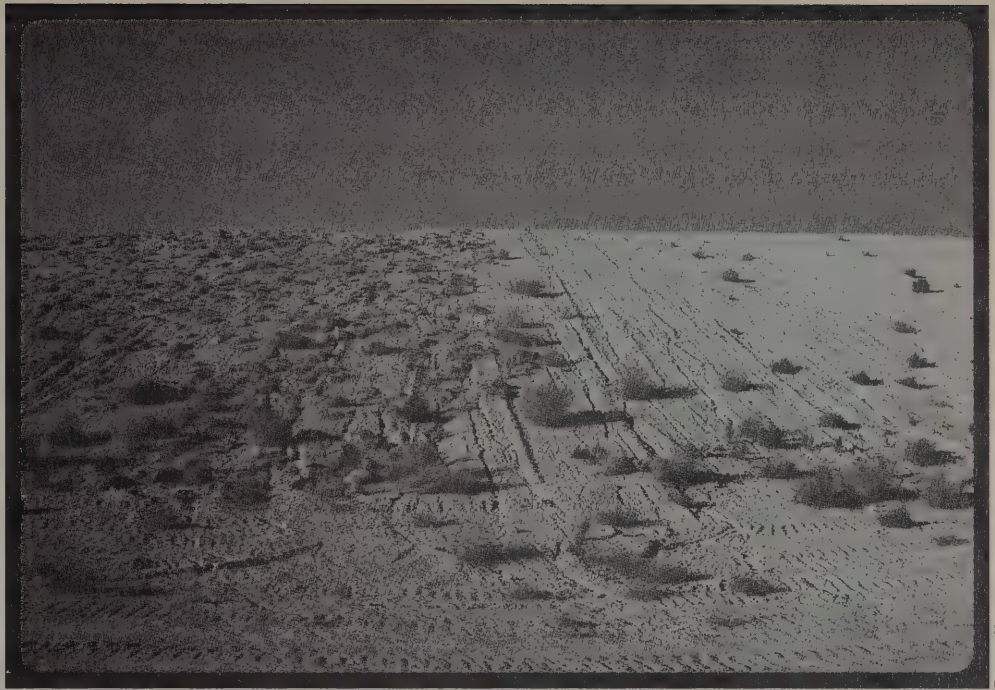
This immaculate transformation has been a change in the minds of ranchers. Conservation ranchers have begun to manage their livestock to mimic the way natural grazers like antelope and bison used to graze. Semi-domesticated elk and bison, or thoroughly domesticated sheep, goats, and cattle—herded, fenced, rotated, electronically directed with hooked-up ear tags, enticed to

move by salt, water, and greener pastures—perform the same functions as the natural grazers. And they do it quite nicely, not on the extinct open range, but between the limits set by freeways, suburbs, private property boundaries, cropland, and national parks.

The Cattle Cure

By breaking up the crust that develops naturally on any kind of soil or soil parent material, cattle enable those materials to accept seeds and absorb water. The roughening effect of their hoofprints also lowers the ground temperature when it is extremely hot. Roughening reduces the loss (from capillary action and evaporation) of water already in the soil. Being big and heavy and having relatively sharp hooves, cattle incorporate seeds and organic material such as old grass, weeds, and hay along

In central Nevada, > near the town of Austin, Tony and Jerrie Tipton were the first to apply the “cattle cure” to lands degraded by mining. Their target was a pile of clay that had been used to absorb a mixture of water and chemicals used in processing gold ore.



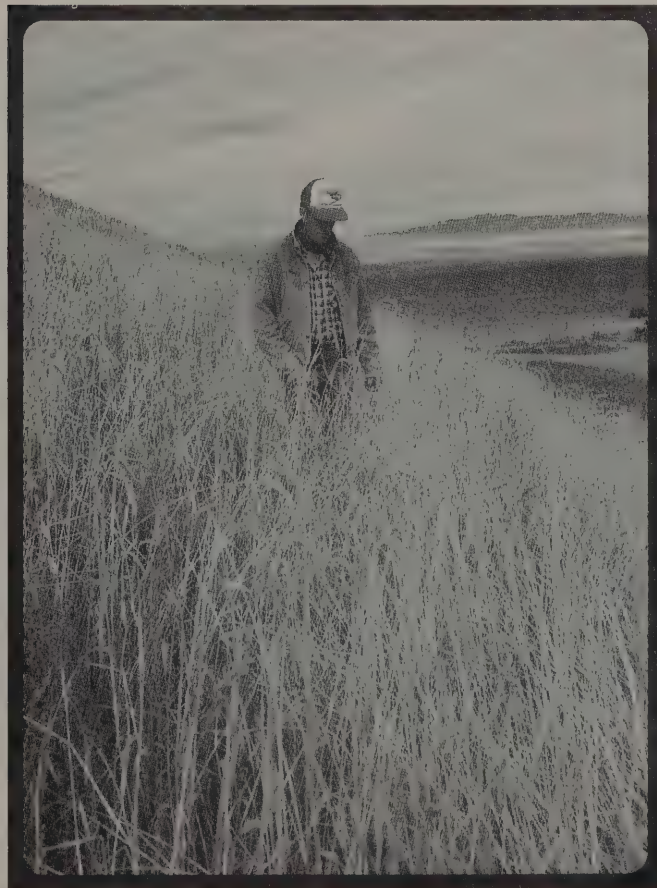
TOMMIE MARTIN

▼ After the animals were removed, the mixture of mulch, dirt, seeds, and animal-contributed fertilizer gestated over winter. In the spring what had been a sterile pile of eroding dirt was transformed into a vital grassland.

with their own manure into the soil. They also tamp the dirt around the seeds, giving the seeds a better chance of germinating.

Cattle work the best in most cases: 1. They are heavy and have hooves, both of which make them effective at stomping mulch, fertilizer, and seeds into the ground. 2. They are more manageable and more readily available than other heavy-hoofed animals such as bison. 3. Cattle manure is relatively fluid (soupy), and therefore incorporates better into the soil than the dung of other animals.

The main alternative to the cattle cure of wastelands is hydroseeding, in which a machine sprays a mixture of seeds and fertilizer onto the barren soil. The main problem is that the



TOMMIE MARTIN



TERRY WHEELER



DAN DAGGET

< Terry Wheeler guided restorative grazing and achieved green and growing grass on sterile mine tailings near Globe, Arizona. Skeptics considered his accomplishment a near-miracle.

The cattle were subjected to regular blood analysis and liver biopsies. No ill effects were noted. In some cases cattle grazing on tailings from which copper and a few other minerals had been removed were found to be deficient in those minerals.

Terry Wheeler's restorative grazing costs as much as \$4,000 per acre—ten times as high as the Tiptons'. Traditional (mechanized) restoration generally starts at about \$1,000 per acre. The difference between Wheeler's \$4,000 per acre and the Tiptons' \$400 is due to the difference in parent material. Wheeler has mostly worked on tailings—fluffy, steep-sided stuff. Cows must be forced to go and stay even though they can sink up to their bellies, which they don't like. Wheeler needed electric fences to keep his cattle concentrated on a mat of hay, which they then pounded as deep as a foot into the tailings. Fencing and maintaining animals in small paddocks is labor-intensive and expensive.



DAN DAGGET

▲ Kids acting as cows. Many animals have been used to rehab degraded landscapes—domestic cattle, sheep, and goats; partially domesticated bison; and wild elk. One of the collaborative groups Dan Dagget works with, the Diablo Trust in Flagstaff, has gotten school kids on educational field trips to stomp hay into desertified rangelands, but the Trust doesn't let them dung and urinate on it. Despite the weight differential and lack of hooves, cow-kids have had surprising success (sixth graders have been top stompers.) Dan was told that a group of archaeologists on a field trip to Bandelier National Monument were used to stomp hay with the same effects.

living layer of hydroseed mulch is unnaturally thin and doesn't bond well. Even if hydroseedlings don't wash away, the seeds and seedlings die rather easily. In some cases the same sort of rotational grazing used to sustain pure cattle-created restorations has been used to bond and sustain hydroseedlings in the soil.

Cattle cures have been achieved in a number of locations in California, Nevada, Arizona, Utah, New Mexico, Mexico, Montana, Idaho, and Colorado. The resulting stands of grass have lasted for more than ten years, and continue to be grazed in ways that the practitioners believe mimic natural grazers.

Dan has been active in the Sierra Club, Earth First! and the Audubon Society, and has helped found a number of issue-specific groups, including Mountain Lions Unlimited and Save Our Rural Environment (in Ohio). He is founder of *EcoResults!* He wrote *Beyond the Rangeland Conflict: Toward a West That Works* (1995; University of Nebraska Press), which was nominated for a Pulitzer. He talks, and gives great slide shows, to everyone and anyone from Earth Save! (vegetarians) to People for the West (a commodity advocate). —PW

EcoResults!

114 No. San Francisco Street, Suite 207,
Flagstaff, AZ 86001. 520/213-5913,
www.ecoreresults.org

A nonprofit run by Dan to create an Internet catalog of all kinds of restoration projects. Projects' progress is updated regularly on the Web site. EcoResults! will seek collaborative community interlinking and coordinates funding for projects; funders can simply look for their interests among the projects offered. The organization will also help to resolve conflicts without resorting to litigation and more regulation (results are more effective than with rote compliance). It is the best—perhaps the only—marketer for restoration. —PW

Finding Refuge In Change

Ah, history! Is it irrelevant? a burden? a maker of wiser action? Ecology was long in coming to history. It wanted to be a "science," true for all times, not just for a period or era. But climate change, restoration, biotechnology, and irrupting species have forced ecologists to consider what was, in order to imagine what ought to be. After sixteen years of drought, a national park in Gambia lost its hippos. When the rains and swamps returned, I was asked as a consultant: should humans truck the hippos back? Should we remake history?

Ecological history instructs restorers. It sets limits, roots humbleness, inspires design. I've looked at land that lost its topsoil 100 years ago and known that natural restoration will take 10,000 years. Should we make a new soil? Only plant for the soil that remains? Tree rings tell me that the climate has changed and species have shifted. Do we design for species to move north and south?

Good history can soften anger or remove blame. No American rancher, for instance, had experienced severe drought in the 1800s. They kept their cattle grazing, down through the grasses' roots, because they expected rain, not out of maliciousness. In interviews, old-timers just shake their heads. They were new to the land.

History offers a mysterious weight to place. When you know its history, a place becomes more precious. Not formal history; the community weaver works through the great medium of gossip ("Remember that snowstorm in '48?").

In the apt words of Terry Tempest Williams, the stories of place, the flows of place, provide for us with a refuge in change. —PW

paring maps by early settlers and explorers, Native Americans, federal and state agencies, and commercial outfits explains wounds and what once worked.

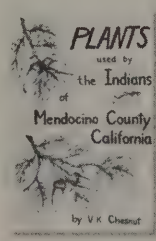
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Archaeology and bone piles

Buried history in places humans burned, built, cut, and hunted. Ecology in places animals got stuck, fell, or were eaten in a lair. For 10,000–20,000-year perspective on humans and longer on the flora and fauna.



• • •



Ethnobiology

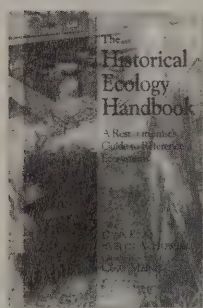
Talking to indigenous peoples. Experiment with old seed varieties. Find hunter-gathering artifacts in museums. Shape a 5,000-year perspective.

• • •

The Historical Ecology Handbook

A Restorationist's Guide to Reference Ecosystems
Dave Egan and Evelyn A. Howell, eds.
2001; 457 pp.
\$30. Island Press

The Historical Ecological Handbook arrived too late for us to integrate it throughout this section. We would have. It is the jump-start text for changing humans tangled up in their changing ecosystems, and the only and crucial field guide for those in love with looking at local photos, talking to old-timers, snooping around caves, looking for arrowheads, rummaging through old maps, finding ancient trees. Although academically written, it inspires a more decentralized, networked, passionate, place-centered local and bioregional history.—PW



Oral History

Retirement interviews, old-timers and their children, local historians. You can squeeze 150 years from the audio tapes and diaries.



Melba Beecher, a Western Mono elder, holding an edible mushroom.

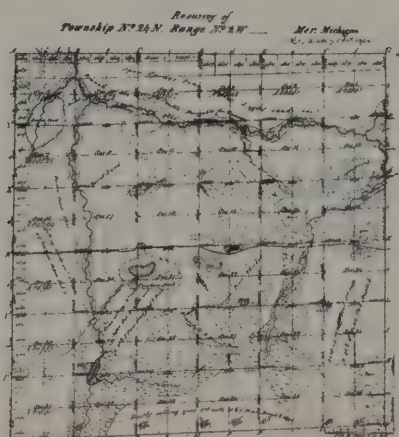
Eco-history tools

[FROM THE HISTORICAL ECOLOGY HANDBOOK]

Historical documents Historic Maps

Census records, water filings, homestead filings, local newspapers, military diaries and reports, personal journals, mining company reports, weather bureau data, Government Land Office Surveys. The US General Land Office has 6,500 volumes of survey notes and plat maps of varying quality, going back to the 1600s. They cover as many as 25,000 acres.

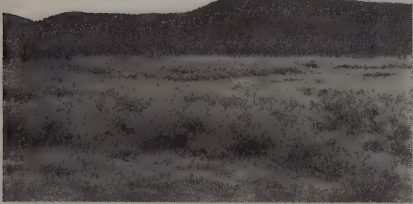
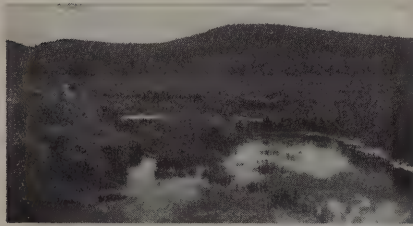
The river moved, a road was built. Com-



1852 General Land Office plat map of Township 24N, Range 2W, part of present-day Roscommon County, Michigan.

Photos and repeat photography

Repeat photography has blossomed. Portraits, partial and full landscapes, aerial and satellite photos; newspaper archives, and private collections provide remarkable 100-plus-year chronicles.



Willow Park in 1913 and 1990. Willows replace pond.



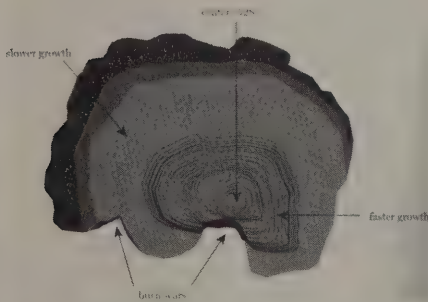
Field inventories

A field study shows gaps in ages of trees. The gap says cattle. The gap forecasts an era without trees for hole-nesting or large-nest birds. The richest single source of eco-history for a 200-year, 250-acre perspective.

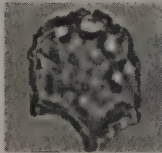


Tree rings

Tree rings can tell stories of fire history, seasons, droughts, and rainfall. Great for studying climate change. A 1,000- to 2,500-year perspective is possible.



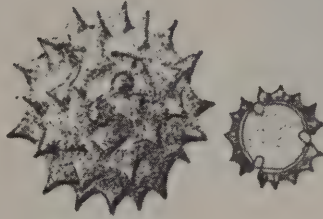
Plant "opals" (phytoliths)



Phytoliths are small crystals found in plants that can ID and date earlier plant communities, some from as long ago as 100,000 years.

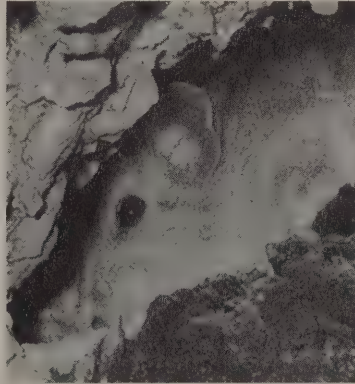
Pollen and sediments

Pollen types form layers in sediment and soil. They tell the history of plant-life change and human uses. Up to a 100,000-year perspective.



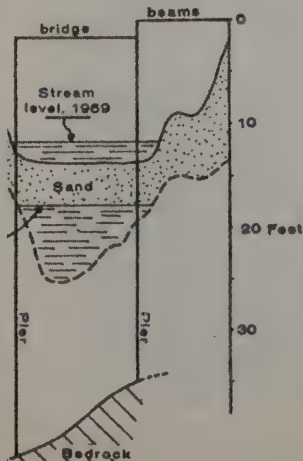
Pack rat middens

These lovely rats collect seeds, twigs, and bones from near their middens. They urinate on them and, after a while, the mass becomes a preserved "fossil." Great for local lists of flora. From recent history to over 50,000 years.



Aging soils and landscape surfaces

Determining the age of a soil can explain why it nurtures a particular plant community and what would be the best plants for recovery. Soils can also tell the history of floods from dam sediments.

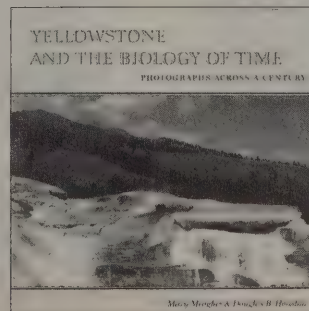


Yellowstone and the Biology of Time

An astonishing book of repeat photos from around Yellowstone, with careful field surveys to squeeze the maximum info possible from the landscape. Hot springs collapse, cheat grass invades, forests grow (then burn, then grow), and some places remain the same. Here is truly a refuge flowing in time.



Beaver Lake and Obsidian Cliff. Top: around 1885-86; Middle: July 1971; Bottom August 1990. Open meadow/lily pond turns to beaked sedge meadow. Lodgepole pine invasion has begun, perhaps helped by below-average rains in the 1980s and the summer drought of 1988. Top photo shows insect and ground fire damage to trees. Note road: from dirt track to paved.



Yellowstone and the Biology of Time

Photographs Across a Century

Mary Meagher and Douglas B. Houston 1998; 287 pp. \$32.95; University of Oklahoma Press

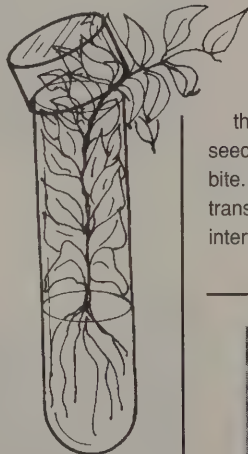
Nurturing the Wanted Plants from Test Tubes



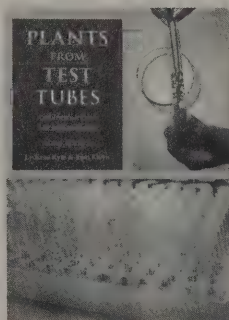
Take a piece of plant (stem, root, leaf, or bud) and place it in a test tube. With care and a few tricks, it grows into a complete plant. No hassle with sex or seeds. You can grow hundreds of identical plants simultaneously. If there are only three left in the world, then test tube babies get you quick restoration insurance.

Plants from Test Tubes is the best hands-on how-to-do-it text, including recipes for propagating fifty-four varieties of ferns, flowering plants, and conifers. It has dense and informative snippets on how "artificial plant cloning" will change the world. (Nothing on the potential escape of bio-engineered clones, alas.) You'll need to learn a new vocabulary ("plasmids," "somatic embryogenesis") but this is an easy place to do it. —PW

"An explant is a piece of a plant from which a culture is started. Theoretically, a single explant can produce an infinite number of plants. This is probably the most illuminating and the most astonishing statement one can make about plant tissue culture. Indeed, if all goes well, one explant will produce thousands of plants. Of course it is good to have more than one explant in order to achieve the desired number of plants in less time, and also because typically some number of plants will be lost as a result of contaminants, disinfectants, or other unknown reasons. Normally, however, only a few explants are necessary, and one stock plant is usually sufficient to supply all the starts required.



Plants from Test Tubes
An Introduction to Micropropagation
Lydiane Kyte and John Kleyn
1996; 240 pp.
\$29.95
Timber Press



Wild Seeding, Wild Propagating



Seed harvester
Sure, you can say "hands off, let nature take its course." But with the landscape so fragmented, there is no nature separate from us. The nearest tree may be too far to supply seed. So we help. These two books turn humans into bird and wind (seed collectors and dispersers); leaf litter, jays, and squirrels (seed planters), and soil makers (compost and agar gel micropropagators). They speak with experiential wisdom for actions confined to our species, like grafting, dipping in root hormones, mist propagation, budding, and sticking. These books are for the nurturers of seed and mother plants, the natal moment of restoration ecology. They're workbooks, not histories or essays, and are comprehensible for all levels of practitioners. I'd love to see updated editions. —PW

"The hard-dough stage can be judged by biting the grain, once the dough stage is completed. In other words, if you cannot squash the seed between thumb and forefinger, try biting it. Once the seed is fully mature, it is usually too hard to bite. Seed collection should start with the transition from soft to hard dough. The time interval between soft and hard dough is a good

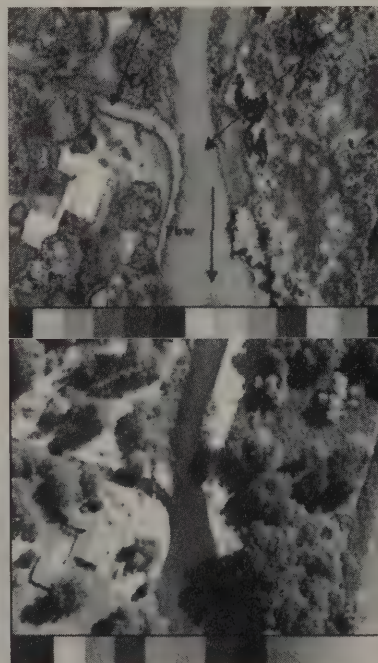
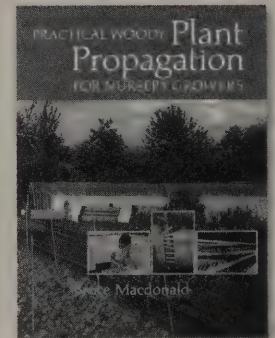
indication of how soon to repeat the collection. With these first collections, the chance of obtaining plump, fully matured seeds can be increased by not stripping the seed from the plant, but rather by cutting considerable plant material and allowing the seeds to dry on the plant material. In most species, this procedure will allow the seeds to reach full maturity.

—COLLECTING, PROCESSING AND GERMINATING SEEDS OF WILDLAND PLANTS



Collecting, Processing and Germinating Seeds of Wildland Plants
James and Cheryl Young
1986; 236 pp.
\$24.95
Timber Press

Practical Woody Plant Propagation for Nursery Growers
Bruce MacDonald
1986; 669 pp.
\$69.95
Timber Press



Thermal and video images showing hot water plumes at the confluence of the Little Applegate River and the Applegate River, Oregon.

Forward-Looking Infrared Radar (FLIR)

\$125 to \$250 per river mile.
Bruce A. McIntosh
Oregon Department of Fish and Wildlife
Corvallis Research Lab
28655 Highway 34
Corvallis, OR 97333
541/757-4263

Sometimes it's the best way to know what's happening, especially when the pollution is not chemical or visible, just insidiously tepid water.

Remote Data Systems, Inc. (RDS)

163 Brunswick Electric Road
Whiteville, NC 28472
800/340-3133, www.rdsys.com
[Suggested by Dave Egan]

Do you need to log groundwater, but it's a hike or impossibly rugged watershed? RDS develops groundwater monitors with broadcasters or longer-term data recorders.

Gentle Machinery

Larger-Scale Works Want Larger-Scale Tools

I know everybody wants access to tools they can buy for individual use. It's Amerika. But there are new ways to think about tools—tools that only a group with a pool of money can purchase, rent, or lease. They're more difficult to think about because first you have to join a group project.

Group-tool needs arise at the moment when all the manual labor in the world seems too scarce, too hard, too expensive, or too time consuming. Perhaps, one thinks, all the work can be done by hands (perhaps in China by so-called "volunteers" or brigades—but even there, stoop labor is no longer glorious). In any case, American volunteersim, though crucial and committed, has yet to reach the Chinese scale or a scale that can replace machinery.

We've already promoted tools whose power is like 100 hands—dozers, extractors, and hotshot operators for restoring streams (Whole Earth, Summer 1998). Here's some, yes, gentler machinery for nurturing life back on the land. And companies who, in most cases, understand that humans design the project and control when and where a machine should go; the project should not be designed for the machine. —PW [Suggested by Dave Egan.]

Ag-Renewal (seed harvesting and cleaning equipment)

1710 Airport Road, Weatherford, OK 73096
800/658-1446, 580/772-7059
www.ag-renewal.com

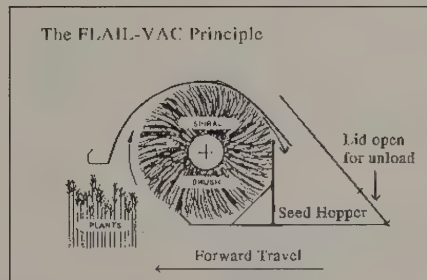
Mechanical seed stripping is, to most, the second best way to collect viable seed. The best method is the "stem-top method": cut the stem tops of each grass plant, allow them to mature in the right climate, allow seeds of different ages to harden, and then strip them off. The milky and soft dough seeds join the already hardened.

Ag-Renewal makes the best of the second-best method. Their seed shucker checks out a field to see if it's worth harvesting and what the seed purity or mix will be. Their giant combine-like seed strippers use a flailing brush to remove seeds from grass heads.

Prairie Habitats (portable and pull-type mechanical seed collectors)

\$600–\$5000. Prairie Habitats, Box 1
Argyle, Manitoba, Canada R0C 0B0
204/467-9371, www.prairiehabitats.com

For prairie, wetlands, alpine meadows, and shrublands, Prairie Habitats has custom-designed portable seed strippers with a soft touch and human ability to fine-tune. A community purchase (costs range from \$600 to \$5,000 for handheld, back, and pull strippers.) Equipment for places where combines should never go. They are working on herbicide applicators and seed drills for restoration work.



Ag-Renewal seed harvester with flailing brush.

Truax Company, Inc. (seed drills)

4821 Xerxes Avenue North
Minneapolis, MN 55430
612/537-6639, www.truaxcomp.com

A truly inventive and thoughtful company. Truax no-till seed drills don't cram litter into the seed slot, which can prevent seed from touching the soil. They also have a special seed drill with wheels at the back. (Up-front wheels can sometimes lift the seeder too far from the earth.) Best equipment for restricted areas such as highway strips and roadsides. Truax also sells used equipment.

Haybuster® Equipment (seed drills, rock pickers)

DuraTech Industries, PO Box 1940
Jamestown, ND 58402-1940
701/252-4601, www.haybuster.com

This is the Big Time when you have government contracts for restoration funding. Haybuster has seed mixers with grass/fertilizer drills and rock pickers to clear wastelands.

Shred-Vac™ 2000-H (seed collector/spreader)

\$38,000 to \$44,000 depending on engine.
\$140 to \$240 for blowing hose.
ShredVac Systems, 15501 Little Valley Road
Grass Valley, CA 95949
530/477-7240, www.shredvac.com

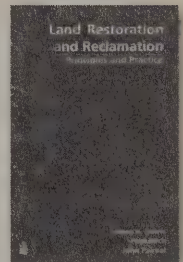


The Swiss Army Knife for converting green wastes (from chippers, hogs, pinestraw, compost, bark, etc.) into mulch. A huge 12-inch hose blows the stuff upslope and down; it can spit 400 feet. You can load the hopper directly, or the hose can suck mulch materials into it. The green waste can be hammered into the right size—sawdust to splintery—on the Shred-Vac. Can use propane, gas, or diesel, and Mr. Shred-Vac can operate it on either side of the equipment.

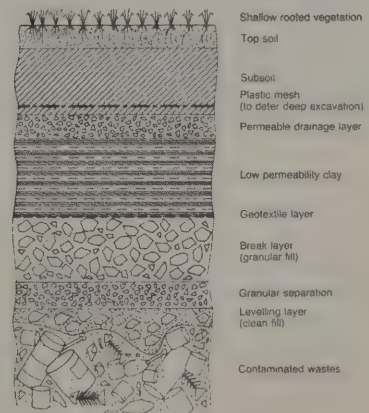
Land Restoration and Reclamation Principles and Practice

James Harris, Paul Birch, and John Palmer
1997; 248 pp. \$61
Addison-Wesley

The text for reconstructing toxic brownfields, mine spoils, railroad yards, the dregs of civilization. Good overview of hi-tech and organic options. British with great honesty, including what failures to anticipate and how to deal with them. Academic prose.



A cover system for contaminated land



Trees

[Suggested by Dave Egan; reviewed by PW]

Treessentials

2371 Waters Drive
Mendota Heights
MN 55120, 800/248-8239
www.treessentials.com



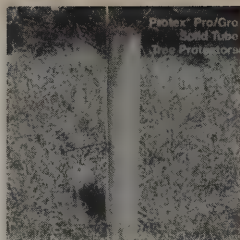
The most thoughtful company to help with seedling survival and nurturing. Has protected more baby trees than any other company in America. All you need to know to protect and support seedlings for the first five years; to control grass and weed competition for water and nutrients for the first three years; and to fertilize the seedling's roots for the first year. Products they sell include:

Right Start. Fertilizer packets with a controlled-release coating on the fertilizer that is an improvement over tablets (which, like generic aspirin, can dissolve too slowly) or granules (which can dissolve too quickly).

VisPore Tree Mats. Without spraying or hoeing, the mats cover the soil around the seedlings, preventing weed competition but allowing water to seep through the mat to the roots.

Mesh and Tubex Treeshelters. These mesh tubes support the seedling with a stake, while allowing sunlight to reach it. They help protect from rabbits, deer, rodents, et al. Two to four feet high, of UV-resistant mesh. Will last at least five years. The gourmet version (Tubex) is stronger and creates a mini-greenhouse, reducing water needs. Because it is denser material, it requires locations with at least six hours of sunlight per day. The mesh tubes are mostly for conifers. Tubex can be for any plant.

Remember that tubes should be buried about 2" into soil, and allow for future growth. Short tubes give deer a munchable bouquet of new growth.



TreePro

3180 W. 250 N., West
Lafayette, IN 47906
800/875-8071, www.treepro.com



To encourage competition, here's another fine company that helps seedlings. They have TreePro (tubes to protect seedlings), a slow-release fertilizer that they say lasts up to five years; a soft-soil agent that breaks up hard soil so roots can extend more easily; a photo-degradable (vs. permanent) mat for suppressing competition by weeds for water and nutrients; and packets with mycorrhizal fungi to boost root development.

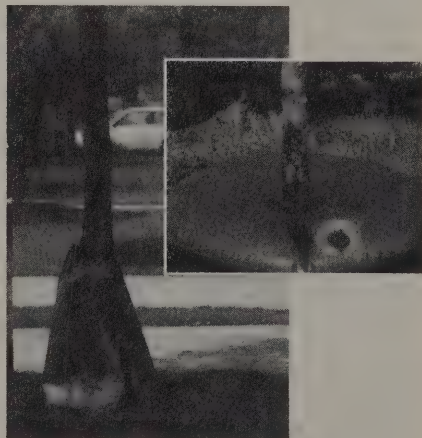
If you want TreePro products in quantity, check Forestry Suppliers or Ben Meadows (see page 31), which also sell tree bags for carrying seedlings, planting bars, dibbles, polymer-based hydro-granules, and different fertilizer packets.

Treegators

About \$22 each from Ben Meadows or Forestry Suppliers

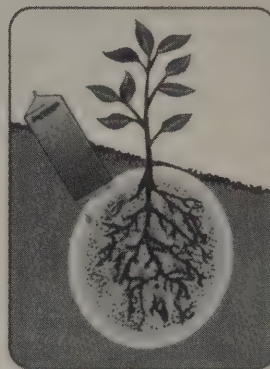
The hottest item in urban, suburban, and individual tree irrigation. Each Treegator holds 20 gallons and is adjustable to drip for up to sixteen hours. One bag is good for a tree up to 3" in diameter, two bags for trees 4-12" in diameter.

There is a low-profile version for shrubs and trees with low branches that holds 16 gallons and fits 1-5" diameter trees, with six hours of drip.

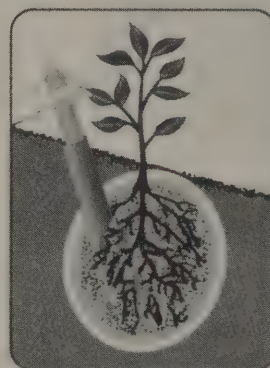


Driwater

800/255-8458, driwater.com. Available easily from the big boys (Wal-Mart, Ace) but you can search the Driwater Web site for smaller outfits. For restoration quantities, contact Driwater.



The quart-size Driwater. Bottom removed.



Replaceable Driwater with a permanent tube.

Driwater is a gel, 98-percent water and 2-percent food-grade ingredients. It is used to release water evenly to reduce wet/dry stress for seedlings and for long-term "hands off" irrigation. If you're away, it's great for potted plants (will water plants for up to thirty days or shrubs and vines for ninety days). Also for larger landscapes, hydroseeding on unstable slopes, drought-intolerant root-stocks, and desiccating climates.

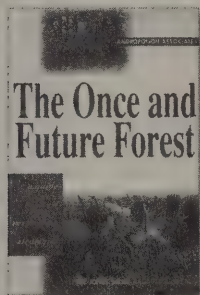
The alternatives (petroleum-based polymers) have drawbacks: they need water to perform, and have a shorter cycle in which they hold on to it; polyacrylimide polymers have some toxicity; the granules migrate toward the surface.



Alaska Environmental Contracting
Stokeford Farm, East Stoke, Wareham
Dorset BH20 6AL, UK. + (0)1929 463301
www.alaska.ltd.uk

A plant translocation company in which one hand destroys while the other restores; it is controversial. But in its restoration work, especially for the Norfolk Wildlife Trust and English Nature, it worked hard to design machinery to task—which included doing minimal damage in an allotted time frame. In very sensitive places, they stayed manual and, in places, used a timber crane to lift scrub alders and willows while doing less damage to the understory. Their goal is a restored fen. Innovative learning with a mix of contractors, conservationists, and heavy machinery.

The Once and Future Forest
A Guide to Forest Restoration Strategies
Leslie Jones Sauer and Andropogon
Associates. 1998; 380 pp. \$30. Island Press

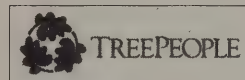


The only book on metro forests, and one not likely to be surpassed. Leslie Sauer's intelligence and enthusiasm shine throughout. The book follows Andropogon Associates' experiments and visions restoring places such as Central Park in New York City. The crucial text for New England's bioregions. We've reviewed it a couple of times because

it's so supremely Whole Earth: good ideas, good tools, good practices.

One note: Its access info is out of date and can be very frustrating. Reprint this book with updated access!

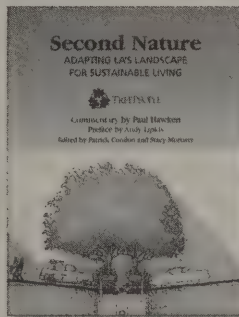
Other Great Resources



TreePeople
12601 Mulholland Drive
Beverly Hills, CA 90210
818/753-4600, www.treepeople.org

Most exciting organization for urban tree planting, water management, and beautification.

Second Nature
Adapting LA's Landscape for Sustainable Living
Patrick Condon and Stacy Moriarty, eds.
1999; 116 pp. \$25 postpaid. TreePeople
(see above); downloadable ("Planbook") at
www.treepeople.org/Trees/charrette.htm



TreePeople's grand vision, with practical details for turning L.A. into a sustainable space to live. Site designs for single-family, multiplex, public, and commercial sites.

Alaska Environmental Contracting uses a timber crane to lift scrub, alders, and willows without hurting the understory.

Tools, Trees and Transformation
A Collection of Restoration Stories from Schools and Community Groups in and Around Portland

Christine Finlayson, Esther Lev, Dennis O'Connor and Susan Chandler
1997; 137 pp. \$15. The Wetlands Conservancy, 503/691-1394
www.wetlandsconservancy.org

A beautifully assembled collection of restoration vignettes involving school kids. How to put together funding, partners, and education. A must for interested teachers.

Restoration Forestry
An International Guide to Sustainable Forestry Practices

Michael Pilarski, ed. 1994; 528 pp.
\$26.95. Kivaki Press

Lists 780 organizations, 120 forestry universities, 100 sustainable wood-products companies, 230 publications, 100 model forestry projects. It includes 120 relevant articles and 800 other info resources. Get the picture?



TreeToad® (manual tree spade)
\$1,600 to \$3,600 from Ben Meadows

For moving trees from one place to another. It is manual. TreeToad is an expensive piece of equipment, but it may be cheaper than available crews, and is definitely cheaper than petro-based hydraulic tree spades. You hammer tree spades into the ground, and crank out the rootball and tree. For trees 1.25 to 3.25 inches in diameter.

Stopping the Leaks

The major goal of environmental rehabilitation is to stop the leakages: topsoil and cutbanks bleeding as sediment into streams, toxics or heavy metals traveling in groundwater plumes and runoff, nutrients leaching from farms. Even if the plants are not native to the exact location, they may be functionally equivalent to a native from the point of view of holding soil, absorbing nutrients and toxics. Technically, this is called "closing the biogeochemical cycle."

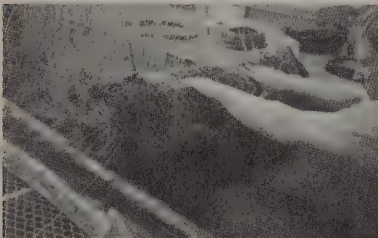
The gross wounds are mines and road cuts. The "medicine kit" includes biodegradable fabrics to slow erosion, some "bio-gabions" (rolls of plant fabric), and mycorrhizal inocula to spur growth. Mycorrhiza are friendly fungi that join plant roots and help them extract nutrients from the soil. Here are some suppliers for mine reclamation, reforestation, watershed restoration, riparian mitigation, bioremediation, bio-engineering, agriculture, and community tree plantings. A tremendous explosion and mainstreaming of Earth care. —PW

Coconut fibre (coir), straw, geojute, and other bioengineering materials

[Suggested by Dave Egan, unless noted; reviewed by PW]

Bitterroot Restoration, Inc.

445 Quast Lane
Corvallis, MT 59828-9406
406/961-4991, www.bitterrootrestoration.com



Great restoration firm, with coconut "sod" that can nurture natives in wetlands.

RoLanka International, Inc.

365 Toccoa Place
Jonesboro, GA 30236
800/760-3215, www.rolanka.com

Big suppliers of coir for big projects.

Nedia Enterprises, Inc.

89-66 217 Street
Jamaica, NY 11427
718/740-5171, www.nedia.com

High-quality coir products for erosion control and growing media.

California Straw Works

5531 State Avenue
Sacramento, CA 95819-1827
916/453-1456, www.strawwattles.com

The source for Straw Wattles™, 25'-long (standard size) tubes of rice straw bound by UV-biodegradable plastic or burlap to slow waterflow. They last three to five years.



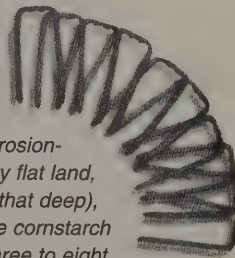
geojute® Erosion Control Fabric

\$82.50 for 4' x 225' roll from Ben Meadows (see page 31)

About 60-percent open, water absorbent. Lasts one to two years.

TurfTacs™, Steel Staples, and TurfTacker™ from Ben Meadows

For turf grasses and erosion-control fabrics on pretty flat land, TurfTacs are 2.5" (not that deep), but biodegradable. The cornstarch staples disappear in three to eight weeks. To avoid stooping and hammering, there's the TurfTacker (\$215) for big projects. For more secure attachment on steeper slopes try 11-gauge steel staples (6" long) with long degradation times. —PW

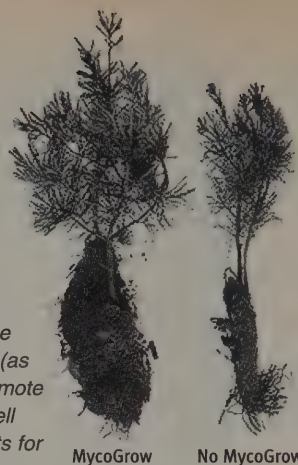


Mycorrhizal Inoculum and Soil Amendments

Fungi Perfecti

PO Box 7634
Olympia, WA 98507
360/426-9292,
www.fungi.com

Highest quality source for mycorrhizal fungi (as tabs and gels) to promote plant growth. They sell MycoGrow™ products for gardeners, potting, tree farms, and reforestation. FP also employs myco-technologies for water filtration. The Web site, with gorgeous shots of photogenic fungi, is worth a visit even if you're not in a buying vein. —PW



Restoration Technologies International

1341 Dayton Street, Suite G
Salinas, CA 93901
800/784-4769, www.biorestoration.com

Large quantities of plant protectors, mycorrhizal packets, animal-damage control products, hydroseed additives, and more.

AgBio, Inc.

9915 Raleigh Street
Westminster, CO 80030
877/268-2020, www.agbio-inc.com

Mycorrhizal inoculum and biological fungicides for use against pathogenic fungi.

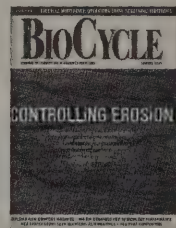
GroLife™

15065 Telephone Avenue
Chino, CA 91710-9164
909/393-3744, www.grolife.com

All-natural soil conditioner and mycorrhizal inoculum in time-release tablets.

Biocycle Journal of Composting & Organics Recycling

Jerome Goldstein, ed.
\$69/yr (12 issues)
JG Press, Inc.
419 State Avenue
Emmaus, PA 18049
610/967-4135



The finest, most consistently intelligent journal connecting recycling to restoration. Ads for "One Big Happy Grinder" and "Express Composting," and articles like "Composted Woody Materials Become Erosion and Control Product" and "Controlling Erosion: Why Compost and Composted Material Are Winning the Battle..." —PW

Wetland News

If terrestrial restoration is a puzzler, fluvial restoration is a breathtaking mind boggler—droughts dessicate plants, floods and shifting channels rip them out, cementing excludes them, and upstream/downstream shenanigans subvert the best-laid plans of beavers and well-meaning humans. Streams and rivers are mysterious (page 71), and oceans and seas more so. The news for restorationists, since 1990, is:

- Coastal wetlands must now add sea-level rise to an already complex equation.
- Past mistakes have been admitted. Huge financial resources are now channeled toward their correction (\$2 million for every 10–15 acres of wetland; \$8 billion to fix Everglades channelization). Even a few dams have been deconstructed.
- Urban creekshed restoration has become especially popular. It's the neighborhood and the results are good-looking (page 82). A tiny group of mavericks suggested restoring the L.A. River—and began to make it happen (Whole Earth, Spring 1995).
- Once considered second-rate alternatives (compared to mechanized wastewater treatment plants), artificial wetlands have found a multi-purpose place as economical water treatment devices, wildlife sanctuaries, and recreational parks.
- Lots of new tools include remote sensors (e.g., page 62).
- Underground and aboveground waterflows have been proven intimately connected. Pump certain wells, lose the river. "Experts" in courts denied this just two decades ago.
- In-stream water rights and water trusts (Whole Earth Fall, 1998) have become stars on the watershed stage.

Lots of crashing waves and ripples in the future here. Looking for a secure job? Try hydro-restoring and conservation. It's hard to believe that "watershed" was an unknown technical term twenty-five years ago. —PW

A Restoring of an Urban Salt Marsh An Interdisciplinary Approach

David Casagrande, ed.
Yale School of Forestry and Environmental Studies, No. 100

Environmental Concerns, Inc.

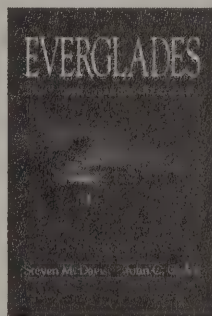
PO Box P
St. Michaels, MD 21663
410/745-9620, www.wetland.org

Wetland Journal

Suzanne Pittenger-Slear, ed.
\$30/yr. (4 issues) from Environmental Concerns (see above)

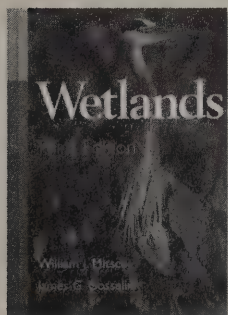
The Everglades The Ecosystem and Its Restoration

Steven M. Davis and John C. Ogden
1994; 826 pp.
\$152.95. St. Lucie Press



The best single book on the complexity of large-scale wetland restoration. Lots to think about in every chapter. You start making comparative lists of driving forces, disturbances, structural features, hydroperiods. There's no end

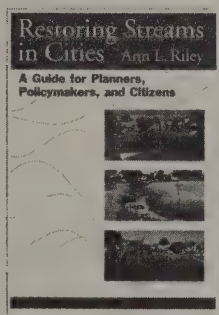
to hydro-learning. Your thoughts cycle as you skip hard spots and flip through pages until you find a sparkling pool.



Wetlands

William J. Mitsch
and James G.
Gosselink
2000 (3rd ed.);
919 pp. \$85
Wiley and Sons

The text about everything wet in landscape.



Restoring Streams in Cities A Guide for Planners, Policymakers, and Citizens

Ann L. Riley
1998; 423 pp.
\$35. Island Press

If city streams could applaud, they would give a standing wave

ovation to Ann Riley. Like a stream, she eddies out in site design, then bumps over the political and technical boulders with the best chapter I know on urban channel restoration and floodproofing, then gushes through a political history of US attitudes toward waterflow management—always flowing toward her delta: the powerful and crucial entanglement of citizenry with stream health and beauty. For those who are about to take, or have taken, the plunge.



Hollywood and comics love to make swamps and wetlands sinister. The "Swamp Thing," a man-turned-plant, now fights injustice, helping beautiful blondes.

Restoring the Nation's Marine Environment

Gordon W. Thayer, ed.
1994; 716 pp.
\$45. Maryland Sea Grant College

This is a book of stories: kelp forests, coral reefs, mangroves swamps, urban wetlands. No inspiring prose or calls to action, but the best overview. A library read.



Breaking a dike at on the Puyallup river to help rehabilitate its estuary.

Resurrection Ecology

Bring Back the Xerces Blue!

by Robert Michael Pyle

Contrary to popular conservation aphorism, extinction may not always be forever. Occasionally, the thoughtful reintroduction of an organism closely related to an extinct type can result in the functional reconstruction of the animal or plant thought to be lost. Recently, in Britain, lepidopterists imported subspecies closely related to the extinct British Large Blue (*Maculinea arion*), bred them up in labs, and introduced the reconstructed species into its old habitat.

The conditions permitting such a Lazarus act are rare, and their employment raises all sorts of philosophical questions. Still, reestablishment of near relatives in restored habitats may be an act worth considering. I feel the attempt would be worth it, if only for the vigorous debate and solid experience it would promote in the young practice I am bound to term "Resurrection Ecology."

I would like to nominate the Xerces Blue butterfly (*Glaucopsyche xerces*) as a candidate for such radical reconstitution. In 1875, San Francisco lepidopterist Herman Behr wrote to his Chicago colleague Herman Strecker, lamenting that the Xerces Blue was "now extinct, as regards the neighborhood of San Francisco. The locality where it used to be found is converted into building lots, and between German chickens and Irish hogs no insect can exist besides louse and flea." Eventually, Behr's prophecy panned out, and the Xerces Blue ceased flying altogether.

Often, when a taxon (a kind of plant or animal) becomes extinct, it leaves behind related taxa that might or might not have become separate species since their isolation from one another. The surviving taxon might

be considered a different subspecies from the extinct type, or a different (but very close) species. Transported to the site of the extinction (assuming its supportive conditions have been restored), the survivor may reinoculate the place with organisms similar to those lost; and in time, under those conditions, may evolve traits that make them virtually indistinguishable from the original occupants. This has occurred in nature. For instance, extinct Floridian butterflies were replenished by arrivals from the Bahamas and Cuba.

The Endangered Species Act allows for the listing of subspecies, recognizing that these are the active units of evolution, where differentiation is in the process of occurring. Subspecies are where the action is, in evolutionary terms. So when a creature drops out due to environmental change, surviving related taxa in not-too-distant localities may contain much the same genetic complement as the lost ones.

Even after Behr's lament to Strecker about its decline, the Xerces Blue remained common in places. William Hovanitz, a prominent California lepidopterist, used to bicycle out to the Presidio and collect as many as he liked without making a dent in their numbers, as he worked out their life history. He spoke about the area with the Presidio commander, who left it undisturbed for the time. The renowned insect photographer Dr. Edward Ross and Harry Davis of UC Davis were the last entomologists to see Xerces Blues on the wing. They observed them around a blue-flowered lupine near the Marine Hospital above Lobos Creek, on a slope at the head of a natural amphitheater. That upland

was subsequently flattened, graveled, and built upon by the Army's ordnance department. The last known Xerces Blues flew over dunes at the Presidio in 1943.

Now, an opportunity looms that could jump-start a whole new era of butterfly (and habitat) sensitivity and imagination. Three conditions have created this possibility. First, since Xerces' demise, the military reservation known as the Presidio, where the butterfly last flew, has become part of the Golden Gate National Recreation Area. Extensive wetland restoration is taking place on part of the Presidio along San Francisco Bay, including restoration of native San Francisco duneland habitat.

Second, the recovery of a Los Angeles cousin of the Xerces Blue, the Palos Verde Blue (*Glaucopsyche lygdamus palosverdesensis*) is underway. The Palos Verdes Blue was thought to be the first federally listed taxon to become extinct on the government's watch. But it was later rediscovered by lepidopterist Rudi Mattoni at a US Navy fuel depot. The Palos Verdes Blue has since become the target of a major lab-rearing and restoration effort by Dr. Mattoni, and the early results are promising.

Third, some fairly near relatives of Xerces may be extant today. Thomas C. and John F. Emmel describe a new Xerces-like subspecies of the Silvery Blue (*Glaucopsyche lygdamus*) from Santa Rosa Island, one of the California offshore islands and part of Channel Islands National Park. Although the males are a paler, more violet blue than those of *G. xerces*, and the females browner, the underside hindwings do bear prominent white halos around the black spots, and sometimes only the white

spots as found in "the true Xerces of San Francisco." As the Emmels put it, the name they gave the new subspecies, *G. l. pseudoxerces*, "reflects its phenotypic similarity to the extinct Xerces Blue."

The discovery of an animal bearing a striking similarity and relationship to Xerces, contemporary with a vigorous attempt to restore suitable habitat in the last place Xerces existed, suggests a symbiotic opportunity too obvious and appealing to ignore.

"Resurrection" of Whom?

Some lepidopterists believe that the Xerces Blue was the same species as Silvery Blue. Whether this is the case or they are simply closely related, it is unlikely that the Silvery Blue and Xerces differentiated very long ago in the evolutionary past.

Closeness might be judged by food habits. The Emmels found the island Silvery Blue females ovipositing on California broom (or deerweed, *Lotus scoparius*), a legume that was the Xerces' primary, if not sole, caterpillar host plant in San Francisco. But some believe Xerces was not strictly a lotus eater. Tree lupine has been reported as a host for it, and the larvae consumed Nuttall's pea in the laboratory.

Nor was Xerces always white-spotted; there was both a form with small black irises and one with larger dark centers that resembled the Silvery Blue. It was just this extreme polymorphism that made Xerces so interesting from a population genetics standpoint. Though the new island subspecies is the closest in appearance to the usual form of the extinct Xerces, it might not be the most relevant factor in deciding whether the Santa Rosa Island form should serve as the best founder population for a reintroduction.

Maybe the founder population should be the closest geographically. A Silvery Blue population that had evolved closer to the San Francisco Peninsula might well prove more

suitable for local conditions than one from southern California. And geographically closer Silveries might also be more recently related to Xerces than the Channel Islands population. Besides, it would likely prove much easier to obtain and transport living material from outside a national park than from within.

The likely candidate would be *G. l. incognitus* (formerly called *G. l. behrii*) from Marin County, Santa Clara, and elsewhere on the north and central California coast. Rudi Mattoni, to whom the idea of restoring Xerces occurred years ago, suggests that this subspecies could be laboratory-reared en masse and interbred to achieve something of the polymorphism of Xerces, while strengthening genetic variability. In order to further broaden the gene pool, founders should be drawn from several sites.

Regardless of the subspecies employed, there would be nothing to lose (except for a modest number of founder individuals who would die) by reintroducing blues to the Xerces' last habitat. There might be a great deal to gain in terms of expanded support for the restoration and refined management practice.

Reintroduction is a last resort that should never be undertaken until the original extinction is virtually certain, and this can be difficult to prove. Nonetheless, perhaps the Presidio restoration will succeed in bringing back a patch of habitat bearing some resemblance to the city's lost landscape. This patch could grow. If all went well, and if local conditions



ROBERT STEWART, COMMON BUTTERFLIES OF CALIFORNIA

acted upon a similar genome to fix the white-spotted blue butterfly and attune it to the rebuilt habitat, who knows? At some future date, we might even be able to say: Xerces flies again!

Two Silvery Blues mating. Note the black irises in white dots. The Silvery Blue (*Glaucopsyche lygdamus*) is very closely related to the extinct Xerces Blue.

Robert Michael Pyle holds a Ph.D. in butterfly ecogeography from Yale University and received a Distinguished Service Award from the Society for Conservation Biology in 1997. He is the author of a dozen books,

including the John Burroughs Medal-winning *Wintergreen*, the *Audubon Society Field Guide to North American Butterflies*, *Chasing Monarchs: Migrating with the Butterflies of Passage*, and *Walking the High Ridge: Life as Field Trip*.

Reintroducing the Lost

Once extinct, always extinct? Maybe not, if cellular DNA can be recovered and embryos transferred to surrogate moms. Joining in assisted resurrection with biotechnicians is uncomfortable for some restorationists. —PW

To Clone a Mammoth

Jarkov, a woolly mammoth, roamed Siberia 23,000 years ago. He's been frozen (or alternately frozen and thawed) ever since. His body, in a cube of frozen ice, has been moved 200 miles from where he was found to an underground tunnel/laboratory. There his DNA will be extracted and placed in an Asian elephant's egg that has been stripped of its DNA. Researchers hope that the Asian elephant will give birth to a complete mammoth. Skeptics say this is a hard task. Adult males are poor sources of DNA even if taken from fresh cells. Male DNA from cells that might have frozen and thawed for 20,000 years may be too damaged.

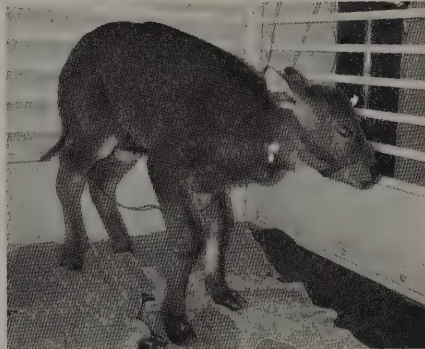
Resurrect the Quagga

The last living quagga died in an Amsterdam zoo in 1883. The quagga was shaped like the Cape mountain or Hartmann's zebra of South Africa, but its body was chestnut brown and its legs were white. Only its head and neck were striped.

A taxidermist at the South African Museum was remounting its quagga (one of twenty-three stuffed specimens on the planet), and found that the original sloppy job had left behind dried connective tissue, muscle, and blood vessels. Mitochondrial DNA from the quagga turned out to be identical to mitochondrial DNA from the plains zebra. The South African museum staff feels confident that they can "resurrect" the quagga by back-crossing plains zebra specimens most resembling it. In 1987 they captured nine zebras whose flanks, bellies, and legs had very few stripes and crossbred them. The process is long as zebra males start reproducing at five and females at about three years. But, as with the *Xerces* butterfly (see page 68), the process may yield an extinct species.

The Guar, the Buccardo, and Surrogate Mothers

Advanced Cell Technology (ACT), a biotech firm in Massachusetts, cloned a threatened guar, a cow-like bovine from Asia. It inserted the skin cells of a recently deceased guar into the denucleated egg cells of a dairy cow. A few days later, the cow eggs became



Noah, the baby guar.

"guar" embryos, and were implanted into receptive mom dairy cows. It sounds easy, but the failure rate is high. ACT started with 692 cow eggs with inserted guar cells. Only eighty-one matured to a size that could be implanted into a cow womb. ACT ended up inserting forty-two "ripe" embryos into thirty-two cows, only eight of which became pregnant. Of these, five spontaneously aborted; two fetuses were removed for study. "Bessie" gave birth to "Noah," a baby guar. The embryo-transfer and surrogate mother technique is the same one used for humans with reproductive problems.

ACT will now try their luck with a buccardo, a mountain goat from Spain that became extinct when a tree fell on "Celia," the last known of her kind. Celia's tissue was frozen. If viable DNA can be extracted and put in the eggs of related mountain goats, the buccardo could be reborn as a species. ACT also hopes to create a male from Celia's chromosomes by removing the X chromosome and adding a Y chromosome from a closely related goat. This technology has already been successful with humans. ACT has successfully accomplished interspecies embryo transfers for a rare Indian desert cat into a domestic cat; a bongo antelope into the more common eland; a mouflon sheep into a domestic sheep; and the rare red deer into the common white-tailed.

The Thylacine (Tasmanian Tiger)

This Australian wolf-like marsupial died out in the 1930s. A researcher at the Australian

Museum (Sydney) found a pup preserved in alcohol from 1866. That was fortunate, as other preservatives distort DNA beyond repair.

Even with the alcohol-pup, scientists will have to reconstruct all the thylacine's chromosomes by stringing together uncorrupted DNA segments taken from the pup.



Access: Reintroducing the Lost

Sometimes a species has gone extinct in the wild, but seeds or even living specimens remain in herbaria and botanical gardens. Kew Gardens is helping to reintroduce the blue crocus to its native Chile and hopes to see the toromiro tree flower once more on Easter Island. The Center for Plant Conservation, housed at the Missouri Botanical Garden, has organized a network of arboreta that keep endangered plants from across the United States. The San Diego Zoological Society's "Frozen Zoo" stores the tissue of some 360 different rare animals. Metabolizing, chilled, or frozen, their wards could be indispensable for restoration.

The Audubon Center for Research of Endangered Species (ACRES)

14001 River Road, New Orleans, LA 70131
504/398-3251
auduboninstitute.org/docs/care_acres.html

A network of zoos and aquariums specializing in new reproductive tech (in vitro fertilization, cryopreservation, embryo transfer) and hoping to return those creatures born of assisted reproduction to the wild.

Millennium Seed Bank

Royal Botanic Gardens, Kew
Richmond, Surrey, TW9 3AB, UK
+44 (0)20 8332 5607/5619
www.rbgekew.org.uk/

A few seeds, gametes or tissues can preserve the most fundamental information of a life form, provide for study, and give means and hope for restoration. No harm is done to life in the wild if we collect carefully and do not mistake gardens for forests. Good is done. The Bank has already taken in seeds of most plants in the UK, and is moving forward with an ambitious plan to collect and conserve seeds from 10 percent of all plants on Earth—about 24,000 species. Dry-land plants, which are especially threatened, will be the priority. The Millennium Seed Bank is supported in part by the British lottery.



Nice Boulders, but Where's the Fish?

Why Twenty Years of Salmon Restoration Efforts Haven't Brought Us Back to the Era of Plenty, at Least Not Yet.

by Seth Zuckerman

This winter, three days after a rainstorm swelled local streams, a neighbor and I donned chest waders and scrambled up Mill Creek in search of spawning salmon. Mill is a small creek, narrow enough in places that you could lie with your head on one bank and your feet on the other. We clambered over mossy boulders beneath a canopy of big-leaf maple, bay, and fir, and covered six-tenths of a mile of sparkling riffles and cascades. It was a beautiful hike, marred only by the fact that we saw not one salmon, nor any evidence of their spawning.

We don't always get skunked on these expeditions. On my last time out, a fisheries biologist and I surprised a female chinook digging a nest in the gravel for her eggs. We paused for lunch on a nearby log, and watched in fascination when she resumed her task as we finished our sandwiches. A lucky crew might see six such nests, called "redds," on a half-day hike.

These spawner surveys have become an annual ritual for two dozen or so residents of the Mattole watershed on California's North Coast, where citizens have worked to revive faltering salmon runs since 1979. A spiderwork of nonprofit groups has arisen to learn more about the fish and their habitat, to communicate to our neighbors what we learn, and to do what we can to help the fish. Some projects have been volunteer efforts, with others funded by foundations, the state or federal government, or commercial salmon-fishing license fees.

My experiences surveying the spawning grounds made me wonder: after two decades of work, why is the sight of a single salmon so noteworthy? We've dragged boulders and logs into creeks to create better habitat for young fish, replaced culverts to make it easier for spawners to get upstream, decommissioned dirt roads that were fouling fishes' homes with sediment,

and raised native salmon eggs in homemade redwood troughs.

We've pursued these projects for a variety of reasons. In part, we miss the taste of the fish and their value as a mainstay of local subsistence and economy.

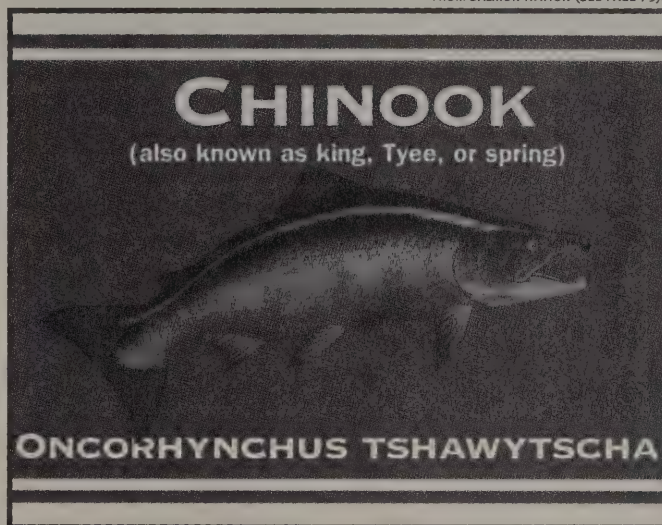
Fishing boats clad in peeling paint and "For Sale" signs, moored at half-empty docks, signal the decline of a livelihood that we hope to revive someday. In addition, we are moved by the power of the fish's journey from headwaters to ocean and back again. They've undertaken this odyssey for thousands of years, since their return fed the indigenous peoples of this region. What's more, Pacific salmon

play a key role in the ecosystem, bringing a bounty of marine nutrients back to the landscapes that shelter their spawning grounds, and providing sustenance directly and indirectly to more than 100 species of birds, mammals, reptiles, and amphibians.

But results have been slow to materialize. Six salmon generations into our efforts, why don't the fish live up to the old-timers' yarns of streams so crowded with salmon that horses were too spooked to cross? The Mattole Salmon Group's best estimates put the returns of Mattole chinook in the mid-to-high hundreds, after having bottomed out at 100 ten years ago. There's no telling how low the runs to our 200,000-acre watershed might have gotten without our efforts. But we'd hoped that restoration would nudge the system back into balance so it could sustain itself without human management, thus working us out of a job. At this rate, our grandkids will still be setting logs in streams to build more habitat instead of setting nets to catch a share of the multitudes that return each year.

We are not alone in this state of limbo. Dozens of other salmon restoration projects began in the '80s, and by the '90s, they'd become epidemic throughout the

FROM SALMON NATION (SEE PAGE 75).



Ten years ago Seth wrote for our special issue on environmental restoration (Spring 1990). He has been the Honest Abe reporter ever since, dedicated, perceptive, engaged. He's the bioregional circuit rider working for EcoTrust, covering the Northwest from Anchorage to San Francisco (tidepool.org). EcoTrust helped with this article. Seth lives in the Mattole River watershed. —PW

Pacific coast. For the Sake of the Salmon, a Portland-based nonprofit, catalogs 410 watershed groups in California, Washington, and Oregon <www.4sos.org/wsgroups/wsgroups.html>—not counting salmonista brigades that are too small to show up on their radar screens, or that cross watershed lines. Despite all of these efforts, West Coast salmon runs started popping up on the federal threatened and endangered species lists in the early '90s. Twenty-six major runs remain there, and none has reproduced its way off the list.

So I started asking colleagues for examples of successful salmon restoration. The responses were instructive. People would brag about the superlative habitat their projects had created, or the number of miles of road where they'd reduced erosion problems. That's great, I assured them, but I mean the ultimate success: fish. Plenty o' fish. Streams writhing with horny salmon.

They hedged. Mumbled about ocean conditions—a shorthand for the impoverishment of the food chain caused by the 1997-98 El Niño weather pattern, which shut off the upwelling that normally brings nutrient-rich water to the surface. Alluded darkly to drift netting, the destructive and wasteful practice that had its heyday in the North Pacific in the early '90s, ensnaring millions of immature salmon. Reminded me that numbers are a poor yardstick, when really our success is measured by the transformation of our culture so that we again care for salmon-like relatives.

Yeah, yeah, I replied, but I still want to know if anyone has brought a salmon run back to abundance, to the point where we can rest from all this restoration. For all my searching, I found surprisingly few examples.

Restoration workers may not reap the satisfaction of seeing fish return in large numbers, but we need to tune all of our senses to determine what the salmon need, and act in the belief that our best and humblest efforts will pay off. We need that humility in light of past mistakes, like pulling logs out of streams in the '70s to address imagined barriers to fish migration, only to pull the same logs back into streams in the '90s to create cover and pools. And a little luck will help, too, to shepherd recovering salmon runs past the threats of drought, flood, and fire.

Recovery will come in its own time, if it does at all, at a pace dictated by the magnitude and type of disturbances that caused salmon runs to dive in the first place. Along the way, we undertake certain chores, like creek clean-up, road maintenance, and spawner surveys, as a ritual of paying homage to salmon and inviting them back up our rivers and into our lives. We perform those acts because it is right, like telling the truth and not stealing your neighbor's bike from his garage. We perform them even though the ocean might be cruel to the young fish when they swim out to sea, for we are the custodians of the freshwater habitat and it is up to us to keep it fit for the fish when they return. And while we wait for

FROM SALMON NATION.



the salmon to resume their former abundance, we do what we can out of the faith that they eventually will.

The successes I encountered showed me that I needed to shift my focus beyond the near term.

It's a tricky assignment, because we humans are notoriously impervious to long-term thinking. As consumers of the quick fix, we resemble mosquitoes who watch with con-

tempt as gardeners ploddingly plant, water, and weed their vegetable beds. The harvest is a few months and a couple of mosquito generations down the road. "Where are the results?" a mosquito might wonder, poking her proboscis into a gardener's capillary. "They'd be better off to be parasites like us." We hope the practices of restoration and habitat stewardship can elevate us from planetary bloodsuckers to worthy long-term members of the ecosystems.

Butte Creek

One place that has witnessed dramatic salmon recovery is Butte Creek, near Chico, California. Its threatened run of spring-run chinook enters the Sacramento River when snowmelt engorges Sierran streams. The fish then make their way through lower Butte Creek, a maze of rice fields and orchards where nature's plumbing has been redesigned for the convenience of tractors and irrigators. Above that, though, the habitat is in good shape. All summer long, the fish hold in deep natural pools, fasting until temperatures cool with the coming of autumn, when they lay their eggs and complete their lives.

By the early '90s, the run of spring chinook on Butte Creek was on the ropes. Surveys of these twenty-to forty-inch-long fish, made by snorkelers floating down the creek in August, showed that the run had fallen from the high thousands in 1960 to the low- to mid-hundreds.

State Fish and Game biologists realized that the chinook had no way to reach the good habitat higher in the creek. Several small irrigation dams sucked out much of the flow and blocked the fishes' migration to the more pristine parts of the stream.

With farmers' cooperation, fish ladders were improved, five dams were removed entirely, and alternate water sources were found for some irrigators. These changes put 40 cubic feet of water per second back in the creek during the spring chinook's upriver migration. Irrigation ditches were screened to keep juvenile salmon from swimming into rice paddies, thinking that that was the way to the Pacific. Happily, other improvements outside the watershed had already begun: the operation of pumps in the Sacramento Delta downstream had been adjusted to reduce the number of young fish swept toward the pumps that send water to southern California. And a series of wetter years beginning in 1993 enabled the fish to migrate farther upstream and to survive more easily over the summer.

These factors have had an astounding effect. In the last five years, Butte Creek has seen one run of 7,500 spring chinook, and another three years later of 20,000. According to biologists, these salmon return primarily at age three. Researchers could thus compare each year's spawners with their parents' generation, and found that runs were typically increasing by two to three times over the previous cohort. One year saw a ten-fold increase.

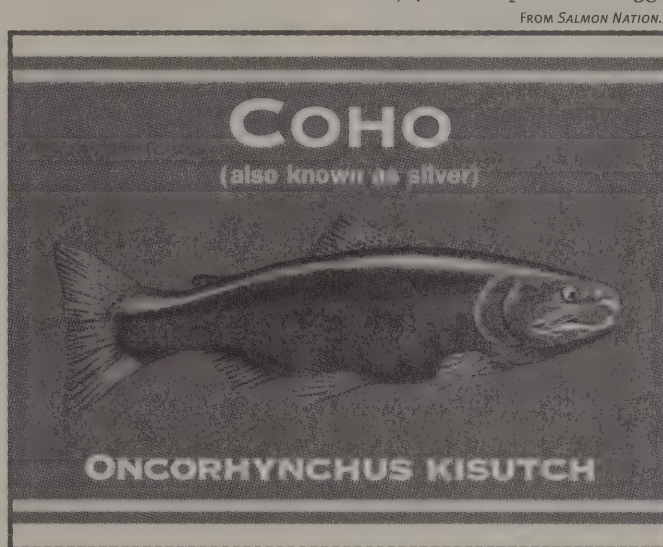
The skeptic in me wondered whether some of these fish had simply strayed from the Feather River Hatchery on a nearby tributary of the Sacramento. But DNA testing has shown that the Butte fish are quite distinct from those hatchery stocks.

Butte Creek is an encouraging sign. It meant that if upstream habitat were intact, salmon could rely on it for recovery as long as we allow them to reach it. The efforts needed to replace the water diversions had been modest, and the gains spectacular.

Can Restorationists Restore?

But the problems of most watersheds are less tractable than Butte Creek's. Often—as in the Mattole—the habitat upstream is far from intact. I wondered whether any kindred watershed had managed to jump-start a faltering salmon run so successfully that they'd put aside their restoration work and let the salmon go it on their own.

I found two watersheds that seemed to fit the bill. When locals turned their attention to Freshwater Creek near Eureka in the late 1970s, its coho salmon run averaged 100 to 200 fish per year. The watershed had enjoyed a respite from logging since the early '50s, and



was recovering nicely from a huge 1964 flood that triggered slides and washed silt into almost every coastal stream. Humboldt Fish Action Council (a group of commercial fishermen, anglers, and civic activists) started a program to fertilize and incubate roe taken from adults captured from the local run. That way, they could protect the eggs from sediment that was suffocating stream-bottom redds.

Meanwhile, the California Conservation Corps and the fish council cut passageways through impenetrable logjams so coho could reach good habitat upstream, and built structures that created pools in the creek or improved their value to the growing fish. For the first decade, signs were encouraging. Numbers rose through the '80s, peaking at around 800 fish in 1988, and staying at 500 or more through the mid-'90s. In 1994, the fish council determined that the creek was fully seeded with coho and decided to see whether the run would sustain itself.

In theory, the coho should have thrived. The commercial coho fishery had been closed throughout the California coast since 1993, and instream work had increased the amount of available habitat by one-third.

But trouble was brewing uphill. Pacific Lumber Company, under new management since a 1986 junk bond takeover by Maxxam Corporation, began intensive logging on its redwood forests in the Freshwater basin in the late 1980s (see page 15). More than 85 percent of one tributary watershed was cut in a decade; another feeder drainage was 60-percent clear-cut in four years. As a result, erosion increased, reducing eggs' chances of survival, and pools filled with sediment, thus displacing young coho from their rearing habitat.

Coho returns plummeted, and the 2000–01 run totaled just 160 fish, down to what it was two decades ago. The Freshwater experience reminds us that recovery is fragile, and can easily be reversed if damage to the watershed resumes.

Forty miles inland, the story on Horse Linto Creek started out in a similar vein. Logging had begun on this Trinity River tributary during the post-war building boom, and the creek suffered when the 1964 flood destroyed poorly placed roads. Even though the headwaters of many Horse Linto tributaries are protected in wilderness, the influx of silt from cutover and roaded areas had decimated fall-run chinook populations by the late '70s.

Fish populations needed an immediate boost. So in 1985, the Pacific Coast Federation of Fishermen's Associations launched a project to raise chinook on Horse Linto Creek from native broodstock. They captured Horse Linto fish, waited until they ripened, took their eggs and fertilized them, then raised the young in troughs and ponds. In the spring, the juvenile fish were

marked with a fin clip and tagged with a coded wire in their noses. Like branded livestock, they ventured onto the ocean pastures of the North Pacific, to return two to four years later.

The fishermen ran this program until 1994, trapping as many as a quarter of the run as the fish returned each November and December. Although they took just 15 to 25 percent of the adult females, the fish they raised comprised some 45 to 50 percent of the returning adults.

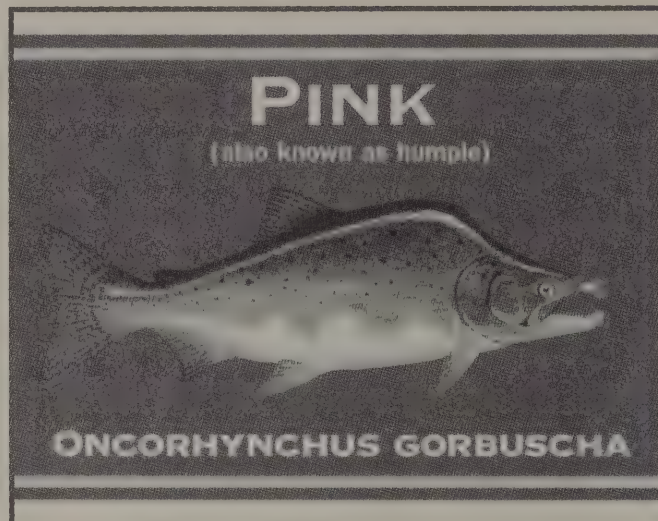
Meanwhile, the Forest Service began to rehabilitate the watershed. They stabilized a landslide that was bleeding silt into the creek, and installed 140 structures to improve spawning beds and create better rearing habitat. They decommissioned roads or reengineered them so they wouldn't impede the flow of water downhill and trigger landslides and gullies. Then, after a decade of raising salmon, the collaborators pulled the plug on the hatchbox program. That act set them apart from permanent hatcheries, whose fish runs are forever dependent on the hatchery, making the watershed obsolete from a salmon's perspective.

Seven years later, the run is going strong. Over the last five years, a stretch of creek that had yielded just a

couple dozen redds each year has produced an average of seventy-six—a three-fold increase. But variable conditions make redd counts a shaky way to compare spawning populations from year to year. The more reliable measure of success is the migration of smolts to the ocean, which occurs during the low-water season and thus can be sampled more consistently. Since 1994, Horse Linto's graduating class of chinook smolts has risen steadily from 11,000 to more than 55,000. The run has outgrown its need for human assistance.

Watershed rehabilitation can't take all the credit for these increases—the timing was right, too. The kind of damage that occurred in Horse

FROM SALMON NATION.



Linto Creek after the 1964 flood takes decades to heal. Subsequent logging took place slowly enough that it didn't reopen fresh wounds as soon as the old ones scabbed over. And all public land in the basin has been dedicated to forest protection since President Clinton's 1994 Forest Plan. Good fortune has also helped. Some 40 percent of the 46,000-acre basin burned so hot in 1999 that it left the

forest a pincushion of blackened snags, setting the stage for dangerously rapid erosion. But snows blanketed the area and shielded the soil through the dicey first winter, before groundcover reestablished itself.

Measuring the Mattole experience against Horse Linto and Butte creeks, I can see why our efforts have been slow to pay off. Poorly designed logging and road building continued to destabilize Mattole hillsides well into the 1980s. When a stream is reshaped by excessive erosion, it can take decades or even centuries to recover, and no amount of artificial habitat can make up for that on a large scale. When riparian forests are cut or swept away, they can begin a lasting recovery only after the banks have stabilized, and then they will take decades longer to reach maturity. We can help initiate these processes, but they will proceed with their own rhythm.

Dead Salmon = Fresh Salmon

We need to be particularly patient because recent research shows that it takes dead salmon to make fresh salmon. Through stable-isotope studies of young coho that have never seen the ocean, we know that 25 to 40 percent of the nitrogen and carbon in their bodies

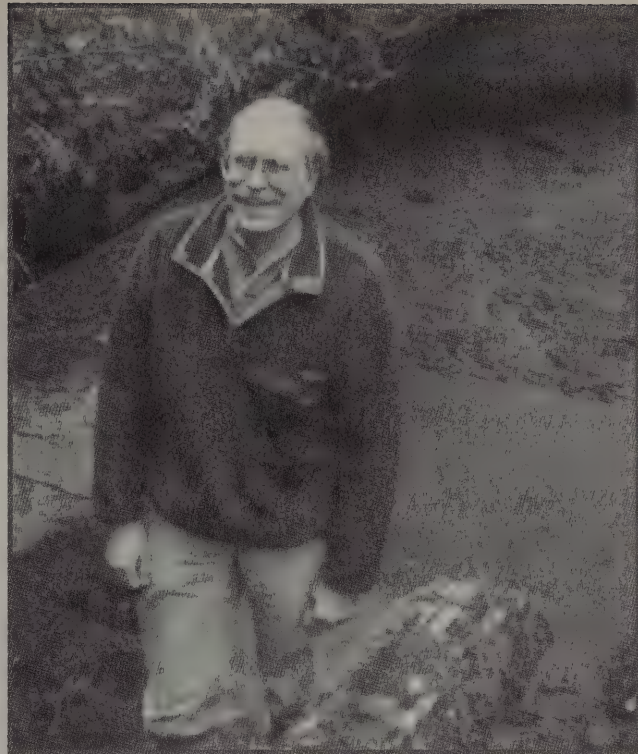
comes from marine sources. Those oceanic building blocks arrived with previous generations of adult salmon, which swam upstream, spawned, died, and were eaten by scavenging invertebrates which then became part of the salmon's food chain. Young fish also feed directly on stray unburied eggs and carcasses. As a result, there's an inherent inertia to low salmon populations, because a meager spawning year provides enough carcasses to feed just so many young fish. To overcome that inertia, some salmon supporters scatter dead hatchery salmon along streams to fertilize them. In 1999, the Washington Dept. of Fish and Wildlife planted 120,000 salmon carcasses in twenty-three watersheds for this.

Biologists on the Keogh River on northern Vancouver Island have scored remarkable results with a related treatment: they seeded the twenty-mile-long stream with several hundred pounds of time-release nitrogen fertilizer pellets. Algae bloomed, insect populations skyrocketed, and juvenile fish are surviving at much higher rates than before. The British Columbian researchers suggest this technique could tide fish over until the return of adult spawners provides enough biomass to fertilize the ecosystem.

The carcass connection illustrates a complex knot of relationships that we are only beginning to comprehend. Another dimension includes beavers' importance to salmon populations: beaver ponds retain organic matter that enriches the food chain, and provide rearing pools for juvenile fish. Salmonologists speculate that intensive beaver trapping in the eighteenth- and nineteenth-century Northwest had already degraded salmon habitat by the time the first canneries opened in the 1860s, and that earlier runs may have exceeded even the most bountiful ones in the historical record.

The lessons of beaver resurfaced on Knowles Creek, a tributary of Oregon's Siuslaw River. In 1982, a debris torrent poured off a clear-cut, carrying huge trees from the downstream, uncut forest. When this stew of logs and mud reached the creek, it dammed the stream and created such a mess that the landowner was fined \$5,000. The incident became a poster child of bad logging. But biologist Charley Dewberry found the next summer that young coho were most plentiful in the pool behind the logjam. The debris flow had created a mock beaver pond.

For restoration to succeed, we need to recreate the context for salmon to inhabit, to have the humility to heed what they are showing us, and to find the patience for the results to manifest. Then the salmon can work their magic—on their own populations, on the landscape, and on us.

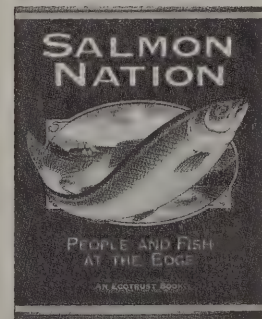


Biologist Charley Dewberry found plentiful coho in a pool behind a logjam; the debris flow created a mock beaver pond.

Salmon Nation People and Fish at the Edge

Edward C. Wolf and Seth Zuckerman,
eds. 1999;
80 pp. \$9.95. Ecotrust

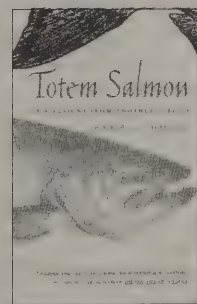
The most accessible, readable, elegant booklet on what's behind a salmon steak (including red dyes for farmed salmon to trick the consumer); what's being done to improve salmon quality and abundance; and how it can all happen if we accept our partnership with stream, forest, and fish. Best access to salmonid bioregional history, happening now.
—PW



Totem Salmon Life Lessons from Another Species

Freeman House.
1999; 228 pp. \$15. Beacon

Totem Salmon sweeps us into the varied and evolving efforts to restore the Mattole River's genetically precarious strain of native king salmon to some fraction of its former abundance. Freeman House draws us into the struggle with clarity and heart. The book is both a lyric ode to a charismatic animal and a memoir of one man's calling to a regenerative life's work. —Stephanie Mills
(excerpted from Whole Earth Summer 1999)



This is the most mentioned book on restoration by everyone we asked, all over the continent. —PW

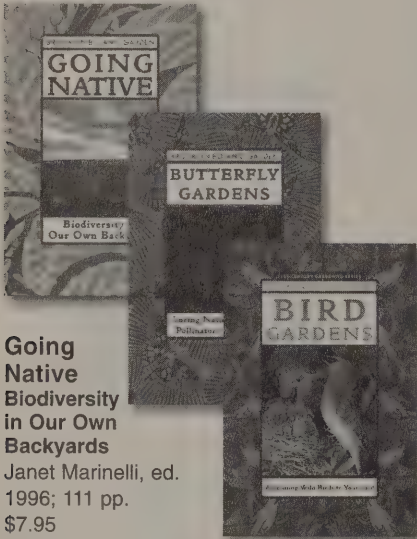
Completing the Tapestry

Completing the tapestry fine-tunes nature's networks. It intricately stitches, nurturing a tangled web. Coevolved pollinators and flowers thrive. Seed dispersers eat and plant the community. Excavators carve out holes for a sequence of birds and squirrels to inhabit. Ants, beetles, and termites turn over soil and wood.

The tasks add linkages. The drama thickens. This is actually a fun time. Hanging birdhouses to substitute for old trees. Drilling holes in snags or woodblocks to attract native bees. Perhaps all that is necessary is to ensure that building materials—mud, tiny pebbles, resin—are available. The genetics can be fine-tuned. The numbers of hybrid flowers (which tend to have lower amounts of pollen and nectar) diminish. By planting more varieties of a species, some flowers can bloom earlier or later in the season. —PW

The Brooklyn Botanic Garden 21st Century Gardening Series

Janet Marinelli, series ed.
(Four volumes/yr.). Included free with membership (\$35/yr.) in Brooklyn Botanic Garden 1000 Washington Avenue Brooklyn, NY 11225
(718) 622-4433, www.bbg.org



Going Native Biodiversity in Our Own Backyards

Janet Marinelli, ed.
1996; 111 pp.
\$7.95

Butterfly Gardens Luring Nature's Loveliest Pollinators to Your Yard

Alcinda Lewis, ed.
1996; 111 pp.
\$7.95

Bird Gardens Welcoming Wild Birds to Your Yard

Stephen W. Kress, ed.
1998; 111 pp.
\$9.95

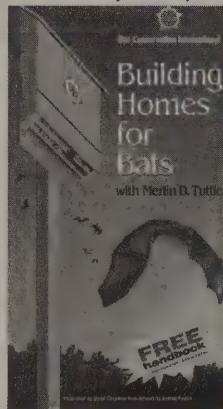
The Brooklyn Botanic Garden turns out four volumes a year (for separate purchase or as a membership premium) of "practical step-by-step tips on creating gorgeous gardens

that make ecological sense." Titles include Easy Compost, Tantalizing Tomatoes, The Shady Border, etc., and the three volumes pictured, which are step one for at-home restoration and crafting links. Bird Gardens has a fine list for sources of native plants by bioregion and the specs for building bird houses. Butterfly Gardens tells you where to visit butterfly "zoos." Their biblios are the reading list for Restoration 101.

Building Homes for Bats (video)

\$23.95 (\$30.45 postpaid) from Bat Conservation International (BCI)
PO Box 162603
Austin, TX 78716
800/538-BATS,
www.batcon.org
[/bhra/video.html](http://bhra/video.html)

BCI offers one-stop shopping for bat lovers: videos, houses, etc. This new video includes a set of plans for building a nursery house.



Orchard Mason Bee Nesting Block

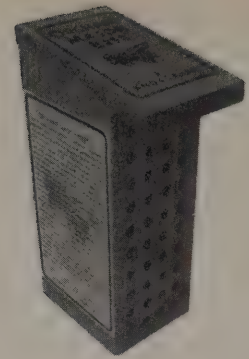
\$14.95

Humble Bumble Home

\$24.95

Both from Peaceful Valley Farm Supply, Inc.
PO Box 2209, Grass Valley, CA 95945
888/784-1722, 530/272-4769,
www.groworganic.com

Mason bees are small, gentle, and resistant to all the mites and hive diseases plaguing beekeepers. Mason bee homes are simply holes in a wood nesting block. The bumble-bee home is a box made of pine with



cotton attractive to the queen bee. It mimics dead logs and snags. You can build your own with books available from Peaceful Valley.

Landscaping for Wildlife

Carrol L. Henderson
1987; 144 pp.
\$10.95
Minnesota Bookstore/Document Division
117 University Avenue
St. Paul, MN 55155
612/297-3000



A mountain of detail made comprehensible and accessible, plus directions and plans for backyards, farmsteads, and whole woodlands. It's good enough even to be used as a lever—show it to your Dept. of Natural Resources and ask politely why your state doesn't have a book like this. —Richard Nilsen

Landscaping for Wildlife in the Pacific Northwest

Russell Link
1999; 320 pp.
\$29.95
University of Washington Press

Landscaping for Florida's Wildlife Re-Creating Native Ecosystems in Your Yard

Joseph M. Schaefer and
George Walden Tanner
1998; 112 pp.
\$12.95
University Press of Florida

Here are two books taking up Richard's advice, with great success.

Solving for Pattern

Fourth-graders' love of a shrimp has built a human web for changing education, ranching, government, philanthropy, and parenting.

by Michael K. Stone

On a crisp late-January morning, I'm on my way to Paul Martin's ranch in southern Sonoma County, California. The ten miles from Petaluma (a city of about 50,000) to Paul's ranch, and the ten from there to the coast, traverse rolling grassy hills, dotted with stands of oak, bay, and buckeye. Dairy and sheep-ranching country. I bicycle here sometimes, and the endless undulations are familiar. These hills know only two colors, golden brown and green. Since it's winter, the land is emerald.

Past Two Rock Presbyterian Church, large cardboard "STRAW" signs mark Paul's driveway. I park by an open structure sheltering 10- or 12-foot-high stacks of hay bales. Laurette Rogers, director of STRAW (Students and Teachers Restoring a Watershed), greets me. "Listen to the meadowlarks!" she exclaims. "I don't recall ever seeing so many here."



JAMES TYLER/BRIGHT MOMENTS! AND THE CENTER FOR ECOITERACY

Before the first restoration plantings, this stretch of Stemple Creek "looked more like a drainage ditch."

From where we're standing, Stemple Creek's route through the pastureland is easy to trace by the lines of willows, interspersed with oaks, extending several feet on either side of the creek. The foliage is high and thick at the east end of the property, where STRAW did its first planting eight years ago. Farther west, where the students will be planting today, it thins out considerably. "When we came for our first planting," Laurette says, "I didn't realize that that was the creek. It looked more like a drainage ditch."

The day's workers, fourth- and fifth-graders from Lagunitas and Wade Thomas Schools, arrive. I had envisioned big yellow school buses, but a line of sedans, station wagons, and SUVs, driven by parents, pulls in. About forty kids pile out and head for the hay bales. "Off, right now," yells Laurette. "We've been doing these projects for nine years without any injuries, and we're not going to have the first one today." Later she confides, "When I'm in the classroom, I'm very mellow. Out here, I get intense." Her carefulness is one

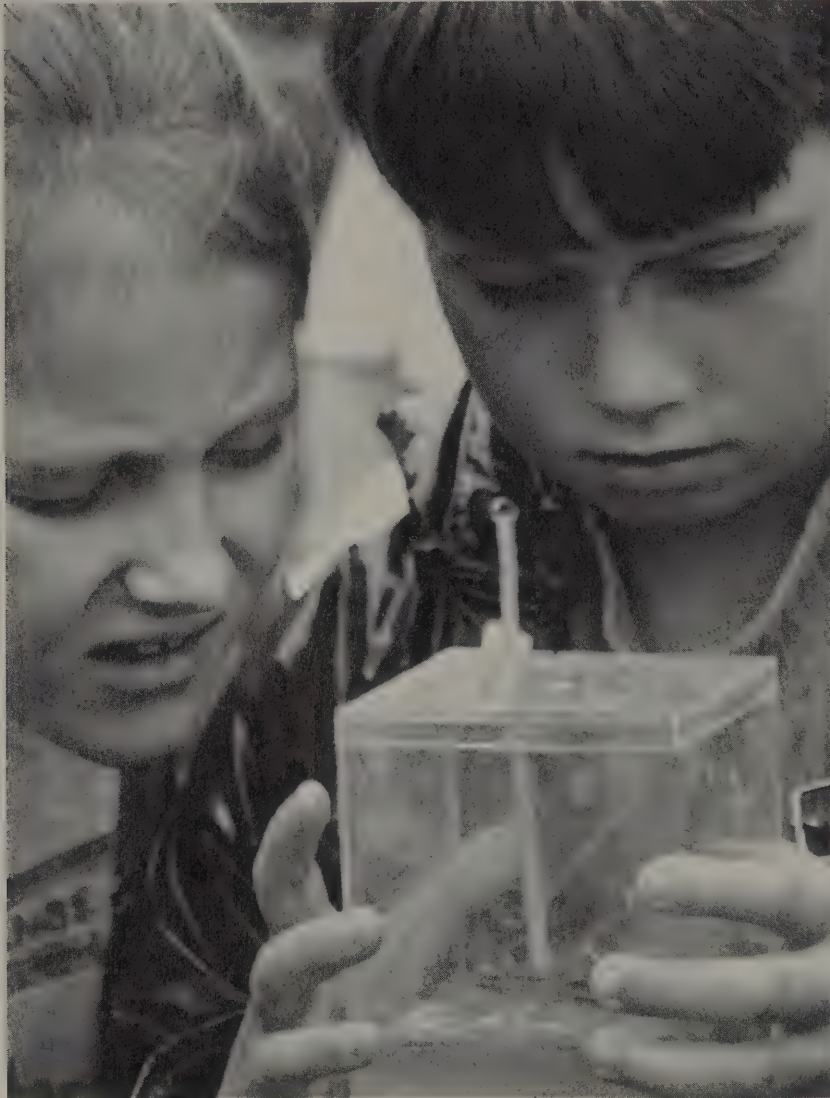
reason Paul Martin trusts STRAW on his property.

Laurette directs the students' eyes to the lush growth in the original planting. "See those trees? The sprigs

construction firm specializing in restoration that is overseeing today's restoration. Prunuske Chatham and STRAW staff have already been out to the work site, to lay temporary

dug a narrow hole a couple of feet deep. He hands out three-foot-long willow sprigs, a half-inch in diameter, cut from trees on the property. He shows the students how to tell which end is "up," how to plant them and tramp down the earth. Recent rains have left the ground soft, making digging and planting easier. The children invent songs and chants to accompany themselves as they take turns with the digging bars. They work for about ninety minutes, break for lunch, then get back to work. By the time they leave, they've planted more than 300 sprigs.

After working on the endangered California freshwater shrimp for six months, students finally saw some of them.



JAMES TYLER/BRIGHT MOMENTS AND THE CENTER FOR ECOLITERACY

you're planting today will be that tall by the time you're in high school." The students pull calf-high rubber boots over their shoes, and line up for work gloves. They're divided into groups of four, each accompanied by a teacher or parent. Each team is issued a heavy digging bar, about six feet long and an inch in diameter, with one pointed end. After a final reminder, "Last chance to use the portable toilet," students, parents, and teachers trek across a muddy field to the creek. They're led by Boone Vale, a staffer from Prunuske Chatham, Inc., a design and

board bridges across the creek and double-check that Paul Martin's electric fences are turned off. On the other side of a barbed wire fence, a herd of Holsteins turns its full attention to the noisy newcomers.

The creek is three or four feet wide, a few inches deep, down two-foot embankments. The Prunuske Chatham staff have placed flags at the places they chose for planting the willows. Boone shows the students how to use the digging bars, three or four people at time, pounding them into the ground, wiggling them around, pounding again, until they've

How It Started

STRAW's origins lie in 1992 at Brookside School in suburban San Anselmo (about five miles from *Whole Earth's* offices), where Laurette Rogers taught fourth grade.

She had showed her class a *National Geographic* film on rainforest destruction. "It was filled with haunting music and pictures of chain saws," recalls Aaron Mihaly, a member of that class and now a high school senior headed for Harvard. A depressing discussion about endangered species followed, until one student raised his hand. "But what can we do?" "I looked into his eyes," says Laurette, "and somehow I just couldn't give him a pat answer about letter writing and making donations."

She turned to Meryl Sundove, a trainer for a now-defunct California State Adopt-A-Species Program. Laurette gave Meryl a couple of criteria: the species needed to be local, and she wanted it to be obscure, to counter the bias toward beautiful and charismatic species being most worth saving. Meryl suggested a trout, a salmon, and the California freshwater shrimp, *Syncaris pacifica* (about the size of a child's little finger), now found only in fifteen creeks in Marin, Sonoma, and Napa counties. The students voted for shrimp, but they weren't that enthusiastic. "We didn't expect to like it," Laurette says.

In retrospect, "the shrimp were

perfect,” says Aaron Mihaly. “We weren’t joining someone else’s campaign to save a distant cuddly animal. No one had ever heard of them, so we had to use our creativity to interest other people. They fit our image of ourselves...we were just a little fourth-grade class. If we didn’t work on them, no one else was going to.”

Meryl Sundove offered Laurette the key: “Pick any species. Go into depth about its life. Find out all about it, and you’ll fall in love with it.” The class did. They found that the shrimp are beautiful, almost transparent creatures. The males are up to 1-1/2 inches long, the females up to 2-1/2 inches long, with rust-colored spots. They’ve been in local creeks since the time of the dinosaurs (a fact the fourth-graders loved). They are the creeks’ garbage collectors, feeding on dead and decaying plant material. Because they are terrible swimmers, they must cling to riparian roots in order not to be washed away.

Laurette learned an important lesson the first year. Most people think that nine- and ten-year-olds need to see immediate payoffs. But her students worked for six months on the shrimp before they ever saw one. (When they did, “There was this big, ‘Ahhh.’ You’d think they had seen a movie star.”) They kept focused even after learning it would probably take fifty to a hundred years for the restorations to have a significant impact on the shrimp’s habitat. They talked about taking their grandchildren to see their work, and telling them, “We did that.”

Laurette refused to predigest material for her students. She gave them original scientific papers on the shrimp; each fourth-grader was responsible for understanding and accurately reporting the most important information from one to two pages of a paper, including figuring out the scientific jargon. Students analyzed the data for each of the fifteen creeks where the shrimp live. They worked in class two hours a week, but frequently put in more time on weekends or after finishing

other lessons. Other classroom lessons kept coming back to the shrimp—shrimp drawings during “art”; shrimp poems, songs, and fairy tales during “language arts.”

The students learned that the shrimp are threatened primarily because of habitat destruction around the streams where they live. Dairy, beef, and sheep ranches are the agricultural mainstays of west Marin and Sonoma Counties. In former years, agricultural agents used to advise dairy farmers to build their pastures near creeks to water their stock. Now, the students discovered, the shrimp habitats were pressured by the damming of creeks, petroleum and chemical runoff, manure in the water, and sedimentation from soil erosion caused by stock trampling the creek banks and grazing the foliage that could otherwise stabilize the soil. It wasn’t just cows, though. It was also off-road vehicles, and dumping of trash, and damage by potato farmers. And it wasn’t just shrimp, which turned out to be one strand of a web that includes trees, grasses, aquatic insects, songbirds, creeks, estuaries, and the Bay. The students began to understand the “shrimp problem” as a watershed problem.

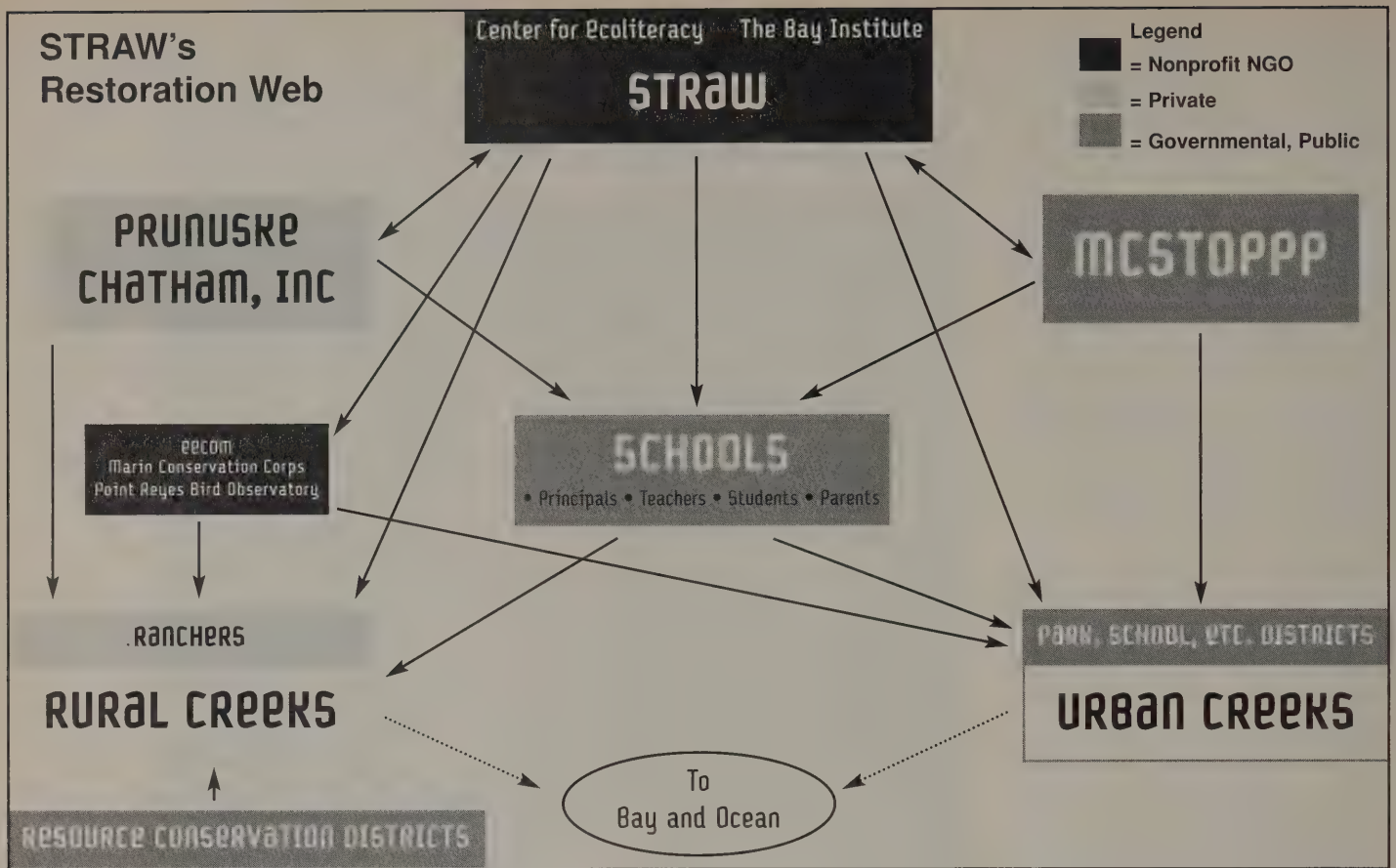
They learned that Native Americans used to eat the shrimp, which are now so rare that no one, including scientific researchers, can even touch one without a permit. They also saw how the story of “their” shrimp was repeated over and over again for other endangered species. (The only other known *Syncaris* species, *Syncaris pasadenae*, became extinct when the Rose Bowl was built over its entire habitat.)

The class chose to focus on Stemple Creek, one of the most deteriorated, which flows from the hills of Petaluma, through about ten miles of cattle ranches, before passing into the Estero de San Antonio. They made presentations to meetings of the local Resource Conservation District and the Stemple Creek/Estero de San Antonio Watershed Program. Liza Prunuske, cofounder of Prunuske

Chatham, introduced the class to Paul Martin. He was concerned about erosion, and wanted to improve his pasturage, but he also remembered the Valley quail he had grown up with, and hoped to see them again on his land. However, he didn’t know if he wanted a lot of fourth-graders running around on his property, or environmentalists descending on him and dictating how he could run his business. As he tells the story, “I wasn’t sure what they were up to. Then Laurette told me that she had told her students to imagine what it would be like if someone came into your bedroom and said, ‘From now on, you can’t get anything out of your closet—none of the toys, clothes, or anything.’ You can imagine the kids saying, ‘But that’s our property, what do you mean?’ Then Laurette told the kids that’s how unfair it would be if they went to the rancher and started telling him what to do. After I heard that story I knew it would be all right, and we started working together.”

Paul, now coordinator of environmental services for the Western United dairymen, had another goal. He wanted “citified people” to know what his life was like. When the class came to his ranch, he brought out milk and ice cream, and reminded the students where they had come from. He helped them understand the economic pressures on family farmers, and why ranchers sometimes don’t have the time or money for restoration work they would like to do. “See that man?” he once asked a group of students who had come to a ranchers’ meeting. “He’ll be eating beans tonight. Five nights a week, that’s all he can afford.”

In March of 1993, the class did its first planting on the Martin ranch. Paul had already fenced off part of the creek, to keep the cattle from returning and undoing the work. The class planted willows and blackberries along the creek banks. “In our area, you get more bang for the buck with willows than anything else,” says Laurette. “Students can see results. In four months, the sprigs



The web of human relations created by STRAW is complex, like the shrimp's foodweb, with its overlapping and specialized niches. Flows of human energy, cash, and water have evolved into an intricate give-and-take. School, STRAW, government, and watersheds form the hubs of this dynamic, growing pattern. This simplified chart shows major connections for STRAW's restoration work. See page 82 for partners who underwrite STRAW's \$300,000 annual budget. The Marin Community Foundation has supported not only STRAW but many of the strands of its web.

they plant will have branches three to four feet long. In two years, they'll look like little trees. They stabilize the soil. They provide shade to cool the water and reduce evaporation. Birds nest in them, and bring in seeds of other trees like alders and oaks."

Students have been coming back to Stemple Creek every year since. The first plantings are now a tall, dense growth that blocks sight of the creek. Five years after the first plantings, the Valley quail, which Martin remembered from his childhood, came back. Songbirds are nesting in the trees. And, to everyone's surprise, California freshwater shrimp—which were not expected to reestablish themselves for decades—have migrated downstream and are now clinging to the roots of willows that students planted six years ago.

Solving for Pattern

For the Brookside fourth-graders, the natural ecology of shrimp, cattle, willows, and streams overlapped with

the social ecology of schools, agricultural economics, politics, and conflict resolution. Their "let's help a species" project eventually evolved into STRAW, a network of teachers (more than a hundred in three dozen schools), students, parents, ranchers, businesses, public agencies, non-governmental organizations, and foundations. This year, about 3,000 students will participate in rural and urban STRAW projects ranging from riparian restoration to insect and bird monitoring.

The first year's project didn't end with doing one planting. The fourth-graders wrote letters to government officials, testified at hearings before local government bodies and Congressional committees, addressed educational conferences, sold "Shrimp Club" T-shirts, arranged media coverage, painted a gigantic mural with a six-foot-long shrimp at the local ferry terminal. They won Anheuser-Busch's "A Pledge and a Promise" award as the environmental project of the year for 1993, and

parlayed the \$32,500 prize into a total of \$100,000 for shrimp protection, all of it raised by the students.

The project gained an important ally when the Center for Ecoliteracy, a new foundation, became a sponsor. The Center was founded by physicist/systems theorist Fritjof Capra (*The Tao of Physics, The Web of Life*), Zenobia Barlow, and Peter Buckley to apply ecological, whole-systems principles to K-12 education. "The Shrimp Project was an ideal model of an integrated curriculum," says Fritjof Capra, "Lessons were organized around an issue kids were passionate about. They developed ecological values out of first-hand experience. They got excited about shrimp, which led them to learn about the problems caused by cows. They had to take into account the ranchers' ideas. To write letters to City Hall, they had to learn to spell well."

The Shrimp Project continued on one or two ranches a year, until 1998. More ranchers were approaching Prunuske Chatham, requesting kids

and projects. By then, Laurette had left Brookside. Ruth Hicks, who had taken over the Shrimp Project, told her, "We need to expand this thing. We need to go to scale."

At that point, Brookside students' networking paid off in an unexpected way. Grant Davis is executive director of The Bay Institute, a twenty-year-old organization that uses scientific research and advocacy on behalf of protecting the entire watershed that drains into San Francisco Bay. The Institute had not worked much with local schools. But five years earlier, when Davis was on Congresswoman Lynn Woolsey's staff, Shrimp Project students called him to invite the Congresswoman and him to events. He remembered those calls—"How often do you get a call from a fourth-grader?"—and offered a base for expanding the Shrimp Project. The Center for Ecoliteracy stepped in with additional support. STRAW was born, as a joint project of The Bay Institute and the Center for Ecoliteracy. Laurette Rogers became its director.

STRAW follows the same basic format as the Shrimp Project—hands-on student projects related to watershed restoration, integrated into overall classroom work, intended to influence the culture of the whole school. The main difference is the extensive network that supports STRAW. The existence and maintenance of that network is as central to STRAW's story as is its restoration work. "Wendell Berry talks about 'solving for pattern,'" says Center for Ecoliteracy executive director Zenobia Barlow. "Unless the people solving parts of the problem are having conversations with each other, the work they do won't last." She calls the Center's support for such networks "sustainable philanthropy."

The STRAW Network

Sponsors. The Bay Institute houses STRAW and takes responsibility for program administration, coordination, and outreach. The Center for

Ecoliteracy partners with The Bay Institute to lead the network of teachers, principals and schools. "We were looking for chances to partner," says Zenobia Barlow. "Foundations don't often do that." The Center provides predictable funding that STRAW can count on every year as a base; the two organizations collaborate to raise the remainder of the program's budget.

Schools. The day a typical class spends on a project site is "one of the last steps," says Prunuske Chatham ecologist Denise Fisher. Before that, staff from STRAW and Prunuske Chatham (or the Marin County Stormwater Pollution Prevention Program—MCSTOPPP— for urban projects; see box, page 82) visit each class to describe the work the class will do and its importance to its watershed. They get the planting materials, tools, and portable toilets to the site, train the students, and supervise their use of equipment. "This was the easiest field trip I've ever done," says fifth-grade teacher Molly Whitely. STRAW handles the logistics, freeing teachers to concentrate on integrating the project into their teaching. For instance, Molly studies the life cycle of the coho salmon in a creek near her school, conducts laboratory simulations of erosion, and combines the study of native plants with study of Native American culture (including building and testing boats made of tules).

STRAW charges teachers nothing. It requires only a commitment to do a watershed project, attendance at "Watershed Week" during the summer (on teachers' own time) and at two dinners and a culminating activity where participants present their projects. The Watershed Week and dinners are partly orientation and training, partly inspiration, partly chances for teachers to share with each other. "When we started the Center for Ecoliteracy," says Fritjof Capra, "we thought we would be helping teachers design educational curricula. We didn't realize that so much of our work would be building personal relationships among teach-



JAMES TYLER/BRIGHT MOMENTS! AND THE CENTER FOR ECOLITERACY

ers." Laurette tells program veterans, "Even if you already know how to do the program, we want you there to help the others."

The events are also a place to honor teachers for working above and beyond what their jobs require. Says Sandy Neumann, Laurette's old principal and inspiration, and now program officer at the Center for Ecoliteracy, "We find the most respectful place we can (e.g., a beautiful site on the edge of the Bay), we get the best food we can, we give the teachers lots of time to walk by the water, we ask them what they want."

She says the program really works when it enters the culture of the school. Teachers come and go, but the principal provides continuity. It's very difficult, for a teacher to take the risks that teaching in a different way requires unless she or he has a supportive principal. So STRAW also sponsors events to give its principals recognition and opportunities to share experiences.

Students and Parents. STRAW requires one parent or teacher for every four students on a project. The 4:1 ratio is partly a safety precaution, but it also draws parents intimately

Above: Parents and students work closely together in hands-on restoration projects.



Rancher Paul Martin and STRAW director Laurette Rogers on Paul's ranch.

into their children's education and reaffirms the importance of the projects in students' eyes. "Parent involvement is key," says Bill Bryant, the father of a Wade Thomas fifth-grader. "We talk with the kids on the way out and back. We participate in field work with them. When it's time to fund-raise for the PTA, we're already committed."

Ranchers. Projects like this are rare on private land. They couldn't happen without cooperation by ranchers, who offer access to their property and contribute their own labor. Ranchers bear the cost, or must find funding, for installing and maintaining fences to keep their herds away after plantings.

"This is our land," says Marin rancher Al Poncia. "We want to maintain it too." As Laurette says, "You can't help the shrimp without helping the ranchers." For many ranchers, the chance to give suburbanites a taste of

their cultural heritage is an important bonus. At the time he and his wife married, says Al Poncia, "most of the parents or grandparents of everyone we knew were farmers. Now most young people are two or three generations away from the farm."

The Professionals. The need for expertise and advice extended the project web to include private consultants such as Prunuske Chatham and governmental agencies such as MCSTOPPP. From the start, one of Laurette's watchwords has been, "Use good science."

"We discovered one time that we were actually pulling out native grasses in order to plant willows," says Laurette. It's not enough either just to repeat a "native good, nonnative bad" mantra. "Sometimes the nonnative blackberries are holding the bank together," says Jennifer Allen, Southern Sonoma County Resource Conservation District watershed coordinator. "Until you've stabilized it, you can't start pulling them out." The right action also needs the right timing. "We were going to pull out a bunch of nonnatives last year," says Laurette. "We called Melissa Pitkin at the Point Reyes Bird Observatory. She said, 'This is the wrong time. The birds

are just starting to nest in them.'"

About half of STRAW's projects are on rural sites. STRAW hires Prunuske Chatham to work with these, seeing what ranchers want to do, figuring out what is doable, purchasing plants (or cutting shoots from plants already there), choosing and staking out the proper places to plant, overseeing students, and following up with maintenance.

Public agencies are also vitally linked to the network. The Marin County and Southern Sonoma County Resource Conservation Districts (RCDs) are special districts of the state. Because they have no regulatory authority, participation by landowners is voluntary. The RCDs offer technical assistance with soil, water, vegetation, and wildlife conservation. They sit down with ranchers, often around a kitchen table, to ask, "What do you see as problems?" A primary role is helping to secure funding from public and private sources for expenses such as fencing, water troughs, and cattle crossings. Grants often require matching funds and/or labor provided by the landowner; STRAW can sometimes count as part of the match.

NGOs. Much more could also be said about the nongovernmental

MCSTOPPP and Urban Restoration

In 1999, Liz Lewis, director of the Marin County Stormwater Pollution Prevention Program (MCSTOPPP) suggested that STRAW add an urban component (which is possible since most of Marin's urban creeks are still above ground). Half of STRAW's projects are now urban.

MCSTOPPP—a joint effort of Marin's cities, towns, and unincorporated areas to prevent stormwater pollution and enhance creek and wetland quality—plays the same role that Prunuske Chatham does for rural restorations: it serves as liaison with

property "owners" (e.g., parks, schools, and open space districts); plans projects; identifies and prepares sites; orients and oversees students; provides plant materials, equipment, and follow-up maintenance.

Urban projects have the added advantage of close proximity to students' neighborhoods and schools (students can walk to half of them from their classrooms). "It's important," Liz says, "for students to see they're caring for their own neighborhoods. They'll think twice the next time about throwing trash in the storm drain. It's important that they learn where their water comes from, that it doesn't magically get treated on its way to them, that it's

habitat for native animals, that people in creek areas need healthy places to live."

Even more than in the rural projects, STRAW's urban work entails removal of nonnative vegetation, especially Cape and English ivy and Himalayan blackberries. In their place, students plant chain ferns, scour rush, snowberries, native blackberries, willows, oaks, buckeyes, and bays. The students also clean trash from creeks (a revealing exercise when the creek runs right behind their school). They assume a sense of ownership for "our creek" or "our stretch," and often return on their own during the summer to do more maintenance.

organizations in the STRAW network (see access below). The Environmental Education Council of Marin (EECOM) brings together environmental, educational, community, and business organizations in the county, to make environmental education a lifelong learning process. "It helps us focus and highlight our work," says Laurette, who serves on EECOM's steering committee. "We can get above the day-to-day fray and think together about how to increase our influence."

EECOM has helped STRAW expand its human network. Through EECOM, Laurette met Marin Conservation Corps (MCC) executive director Marilee Eckert. MCC is an NGO that combines environmental

preservation with job training for 18- to 30-year-old Corpsmembers (ranging from high school dropouts working on GEDs to college graduates considering careers in teaching). With STRAW, Corpsmembers help with classroom preparation and direct students on projects. "They're able bodied, they don't mind getting dirty, and kids really look up to them," says Marilee. "They might have had trouble in school themselves, and it's empowering when the kids treat them as role models." They do heavy work with power tools, such as gas-powered brush cutters and chain saws, that are too dangerous to put into the hands of elementary-school students.

In 1999, another NGO, the Point Reyes Bird Observatory (PRBO) joined the STRAW network. Birds are especial-

ly good for student programs, says Melissa Pitkin, PRBO's education coordinator. "They are easy to study, easy to see, and easy to quantify. And if birds are healthy, the ecosystem is healthy." STRAW now offers programs such as bird monitoring (partly to measure the success of restorations) and public education about bird conservation.

"The Shrimp Project was like a pebble thrown into the water," Laurette writes at the end of her book on the project (see below). "It did many things we did not know it would do. It touched many people we did not know it would touch....The learning continues to expand past all our imagined lesson plans."

**The California Freshwater Shrimp Project
An Example of Environmental Project-Based Learning**

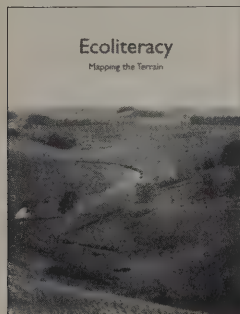
Laurette Rogers.
1996; 40 pp. \$5
Heyday



One of the ways the Center for Ecoliteracy supports STRAW is by helping with publications. Here they collaborate with Heyday to tell the story of the Shrimp Project and the educational principles underlying it.

**Ecoliteracy
Mapping the Terrain**

Zenobia Barlow, editorial director. 2000; 90 pp. \$11.95. (\$18.90 postpaid) from the Center for Ecoliteracy, 2522 San Pablo Avenue, Berkeley, CA 94702 510/845-4595, www.ecoliteracy.org



STRAW serves as a case study for exploring the many facets of education for ecoliteracy.

STRAW's Restoration Network

Students and Teachers Restoring a Watershed (STRAW)

C/o The Bay Institute, 55 Shaver Street, Suite 30, San Rafael, CA 94901 415/721-7680, www.bay.org/straw.html

The Bay Institute

Address and phone, same as STRAW; www.bay.org

The Center for Ecoliteracy

2522 San Pablo Avenue Berkeley, CA 94702. 510/845-4595 www.ecoliteracy.org

Environmental Education Council of Marin (EECOM)

883 Fourth Street San Rafael, CA 94901 415/485-4908, eecom.net/

Marin Conservation Corps (MCC)

27 Larkspur Street San Rafael, CA 94901 415/454-4554, www.marincc.org

Marin Resource Conservation District (RCD)

PO Box 1146 Point Reyes Station, CA 94956 415/663-1170, www.sonomamarinrcds.org/district-mc/

Marin County Stormwater Pollution Prevention Program (MCSTOPPP)

PO Box 4186, San Rafael, CA 94913 415/499-6528, www.mcstoppp.org

Point Reyes Bird Observatory (PRBO)

4990 Shoreline Highway, Stinson Beach, CA 94970. 415/868-1221, www.prbo.org

Prunuske Chatham, Inc.

PO Box 828, Occidental, CA 95466 707/874-0100, www.pcz.com

Southern Sonoma County Resource Conservation District (RCD)

1301 Redwood Way #170 Petaluma, CA 94954 www.sonomamarinrcds.org/district-ssc/index.html

STRAW's Current Funding Partners

California Department of Education, Center for Ecoliteracy, The Dean Witter Foundation, The Gabilan Foundation, The Fred Gellert Family Foundation, The William and Flora Hewlett Foundation, Marin Community Foundation, Marin County Wildlife & Fisheries Committee, National Fish and Wildlife Foundation, Oracle Corporate Giving Program, The Rose Foundation

Restore Balance, not the Past



An Interview with Ray Dasmann

At his home in Santa Cruz, Ray spoke with laconic wisdom and a droll sense of humor as to “what fools these mortals be.” Over the past fifty years Ray has made singular contributions to the intellectual scaffolding of modern ecology and environmentalism.

A San Francisco native and UC Berkeley graduate, he did groundbreaking work as a field biologist, studying deer populations in California and, later, African wild game. During the 1960s, while he was at the Conservation Foundation, his pioneering work with UNESCO inaugurated its Man and the Biosphere Program. His concept of ecodevelopment and his inclusion of indigenous people as integral to the ecological equation are two of his major contributions to contemporary environmentalism. His book *The Destruction of California* (1965) altered historical perspectives on the Golden State and became the text of a burgeoning environmental awareness. His textbook *Environmental Conservation* has sold hundreds of thousands of copies worldwide. Peter Warshall remembers seeing it passed among game rangers in Kenya in the 1970s.

Ray was a Professor of Environmental Studies at UC Santa Cruz (1977–89), inspiring a generation to become bioregional agents of change as ecologists, field biologists, and activists. —David Kupfer

David Kupfer: Why do restoration? Why not accept the world as it is?

Ray Dasmann: When an environment has become unbalanced, polluted, or devastated to the point where it is no longer healthy or able to sustain life, restoration becomes necessary. People may choose to do restoration in order to regain a healthy environment or to upgrade the quality of life in their region. Then you must ask, what is it you are trying to restore? What conditions in what time period are you trying to regain? A long time ago? Last week? Earlier today? Sometimes restoration means creating a new web of relationships with different species than were present in the past.

There’s no choice in this matter. Either we restore the damage to ecosystems or continue down to the

bottom of the hill, and at the bottom of the hill there may be some environmental conditions that humans cannot survive. If we occupy the planet, we need to take care of it, otherwise it will be uninhabitable.

DK: Why try to go back to some point in time?

RD: Ecosystems are always changing. The thing is, what direction are they going in and why? Most restoration aims to regain the condition existing when the Indians inhabited this land prior to the Euro-Caucasians. Is restoration to that point in time what you want? Native Americans also changed things and deliberately managed the environment. One of the big things with the restoration community is getting rid of invasive species, e.g., fighting the

takeover of grasslands by invasive species. You may be restoring balance to the system rather than putting things back the way they were.

DK: How do you create long-term care of an ecosystem, pieces of landscape, watersheds?

RD: You have to look not just at what goes into maintaining, protecting, and conserving, but also what it is used for, who the users are. Long-term care needs to involve how people think it should be protected, not just in the immediate area but the surrounding region where people are using the land for different purposes. This is true in the city as much as in the salt marsh. But you have to get people who are users or inhabitants of that ecosystem involved. A lot of safeguards have to be in place and supported by the community or it will break down in the long run or the short run.

DK: What do you think about the changes in the view that local restoration is vital when we now have such a world climate crisis?

RD: We are at the point where we have to think globally. There is no option—the tide is rising and the world is coming to your front door. It used to seem rather simple. Just create a national park or national monument. But protected areas are only the beginning. If you want to keep them, or restore damaged

ecosystems, think of the long term, get people involved, not just local people, but people interested in the place.

DK: In light of all the damage you have seen to the environment, how have you been able to live without being in total despair?

RD: You develop a hard shell and you cry a lot (laughs). There's no avoiding it. We keep winning little battles but losing big wars. It is disturbing. But what is the choice? Either you work and fight or give up. If the thing is important to you, you won't give up.

DK: Do you see any possibility in reestablishing old ecosystems in California?

RD: Yes, I see an opportunity for restoring the land to the condition which the Euro-Americans inherited from the Native Americans. I believe the biggest ecosystem challenge will be in restoring the nearshore marine ecosystems, one area which is receiving considerable damage. If you are looking for biodiversity, that is where you will find it. Marine systems are far more diverse than terrestrial. There is a tremendous amount of life we are affecting and a lot of it we cannot even see. And of course climate change is hitting the oceans particularly hard. So we can sit around and watch Manhattan gradually sink into the water or we can do something about it. If you are living on a Pacific Island, that's no joke.

DK: Describe ecodevelopment and its derivation in your work.

RD: It is based on three premises: It must meet the basic needs of people, in particular, the poorest people, before attending to the wants of the well-to-do. It must encourage self-reliance and a degree of self-sufficiency in essentials, based on the knowledge, traditions, and skills of the people concerned. It must be based on a symbiosis between people and nature, to maintain the diversity of

the natural world and to provide for the diversity in the social world. Through this it can guarantee the sustainability of all essential activities.

DK: What have you contributed to the field of conservation biology?

RD: I have no idea....(laughs). Looking at the whole picture, all tied together, rather than only part of it. You can't throw things away because there is no away.

DK: Didn't you coin the first law of the environment?

RD: Yes (laughs)...“No matter how bad you think things are, the reality is much worse.”

DK: You'd like to be remembered as someone...?

RD: Yes! (laughs). Someone who worked mostly as an interpreter of other people's field work. I did a lot of writing. I pulled together others' information and ideas gathered in the process of doing applied work....

DK: From where do you get your sense of hope?

RD: Probably from the sense of satisfaction seeing my direst of predictions come true....It is like “I told you all about twenty years ago! Why didn't you listen to me?” Actually, I get a very real sense of satisfaction from seeing people doing the right thing like you are doing out on the organic farm where you live, doing the right thing on a bare piece of land. You are seeing the organic concept widely accepted now, even across the heartland, where chemical farming has been so prevalent. It is what I had hoped for, but I did not expect it so soon. It has been frustrating seeing conservation and environmental issues so early on and not having people pay attention. Actually some things have been quite successful. The organic farming movement is not going away. In fact, it has been practiced for centuries. We know very well how to do it.

DK: It must be frustrating to witness the war waged on the planet all these years.

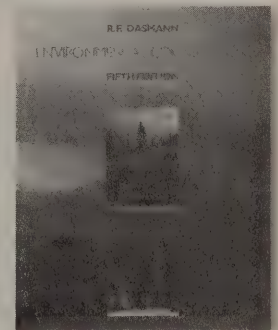
RD: It puzzles me all the time. We know the way, yet we go the wrong way....You do this on a highway and you won't last long. You do it in broad economic terms, you seem to get by for a while. Yes, we know how to solve these problems, without any doubt. It is maddening. You can't think of it too seriously, otherwise you start to weep.

DK: So the way out of this dilemma is...?

RD: I believe we must restore the sense of individual responsibility and involvement, and get away from the idea that conservation is the responsibility of somebody else—the federal government, the state, the corporations, the rich. We need to look at our patterns of consumption and behavior and shed those practices that contribute to the destruction of nature. This is incredibly difficult to do in a society oriented toward consumption, material enrichment, and waste. I certainly have not succeeded in abandoning all my bad habits, but it is more difficult for people who have grown up in my generation as habits are more deeply ingrained. But without that total involvement, words become meaningless.

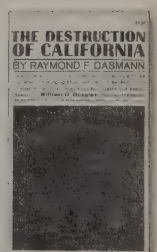
Environmental Conservation

R. F. Dasmann 1984
(5th ed.); \$71.95. Wiley

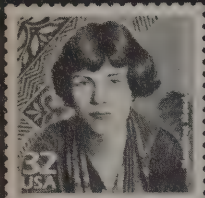


In the Spring of 2001, the Regional History Project of the UCSC Library is publishing an oral history, Raymond Dasmann: A Life in Conservation Biology. Copies may be ordered for \$16 (paperback) and \$25 (hardback) direct from Xlibris at www.xlibris.com/bookstore, 888-7XLIBRIS, Orders@Xlibris.com.

In the Spring of 2002, University of California Press will publish Last Call for the Wild, Ray's autobiography.



Margaret Mead 2001 Awards



Three for the Kids

This is the 100th anniversary year of Margaret Mead's birth. In celebration, the Institute for Intercultural Studies (Margaret's foundation), with the help of *Whole Earth*, is recognizing small groups working to change the world. Margaret was concerned with all configurations of home and family, and how they create fulfilled and happier lives. Each of this round's winners shares that concern.

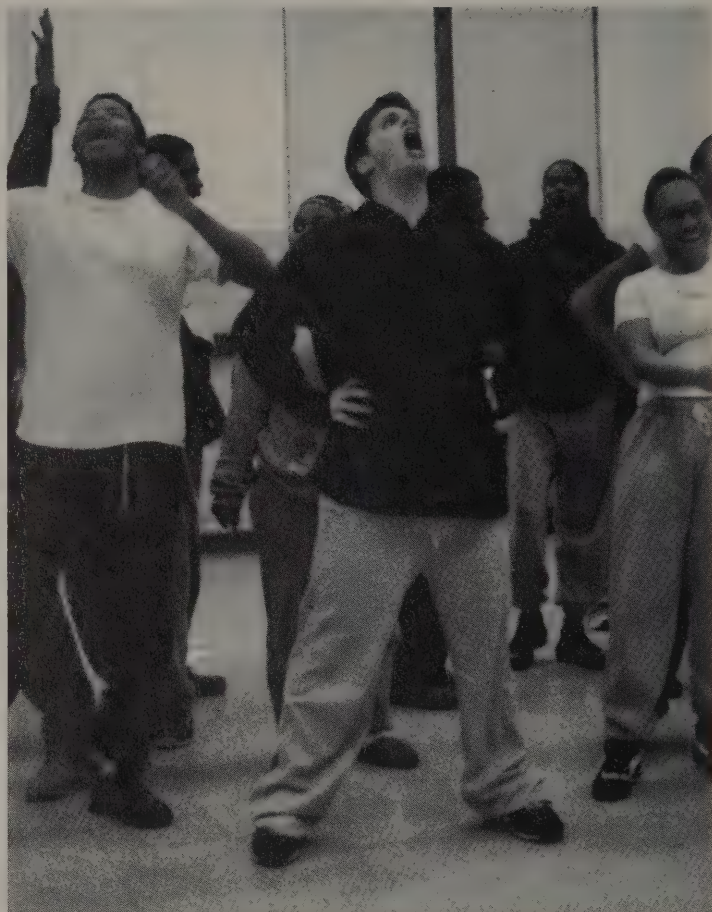
The judges' talk centered around kids. These groups give kids more possibilities—for fun, for multicolored emotions (not just anger), for disciplining themselves, for forming lasting friendships—the good stuff most of us had to a degree we do not appreciate. City at Peace does it by theater; Camp AVARY by combining good times in the country with follow-up during the rest of the year; and the Homeless Prenatal Program by proper care for prenatal kids and hope for their mothers. What happens to kids is the underbelly of neglect (in rich and poor families); these three small groups have built organizations that others can learn from, especially about the complex and hard practice of giving a lift to love. —PW

Winner

City at Peace

On a stage in Washington, D.C., young people are gathering together to tell their stories. A few are homeless. Some live in shelters and foster care homes. Some are wealthy and live in mansions. Some are high school dropouts. Others are "A" students in private schools. Some have been abused. They are all between the ages of thirteen and nineteen. They are homosexual, heterosexual, bisexual. They are Euro-American, African American, Latino, Arab, Asian, and mixes of all of these.

The teenagers have decided to spend a year in "City at Peace," a musical theater group whose staff helps them write and star in their own show. The show is a series of skits, musicals, dialogs, and dances based on their life experiences. It tours the city's theaters, community centers, churches, and schools.



City at Peace cast in rehearsal.

The Washington, D.C. group, now headed by Sandra Hallaway, was the first City at Peace program. It has been honored with the Margaret Mead Award because it is a tiny group (nine employees, including a choreographer and musical and technical directors) that has created a model for other Cities at Peace in Charlotte, North Carolina; four in Santa Barbara, California; three in Israel; and others in the works for Los Angeles and Jordan.

Since its beginning in 1994, more than 500 youth from over sixty schools and workplaces have participated, performing nine original musicals before more than 50,000 audience members.

City at Peace doesn't stop with the performances. It partners with community organizations like Big



CITY AT PEACE

Some cast members groovin' down during rehearsal.

Brothers, Big Sisters, local elementary schools, and other nonprofits to discuss ways to resolve issues facing youth. It creates educational materials for adults. It coordinates theatrical games for younger children in elementary schools.

That's just how Paul Griffin, the idealistic founder, wanted it. Paul saw the theater as a natural way to encourage growth and empower kids who might otherwise "fall through the cracks."

"I was fat. I was weird. I was lonely," writes Assata Elom Perkins. "I was coping with problems I didn't feel I deserved. I was slashing my wrists. That was before I got in City at Peace. Inside City at Peace I felt loved and accepted and I had a second home....I could talk about my feelings and not be judged."

Nobody is accepted to City at Peace on the basis of talent. Hundreds of youths "audition" each year by filling out a personal survey about their lives. The staff selects the applicants who can make the time commitment and who will benefit most from the program—around 120 altogether.

"We want everybody. There is no target population here," Paul says. "No problems are isolated. Then you have solutions that are isolated, and no isolated solution ever works. You can't solve the problem of poverty by excluding the wealthy. You've got to get everybody in a room together and say 'Okay, let's work it out.'"

Paul, an actor and theater teacher, formed City at Peace to combine dance, voice, and acting training with conflict resolution, leadership training, and building self-esteem.

"We want to give the kids power and responsibility now, so that when they grow up, they'll know what to do with it. We treat them like adults," he says. The participants choose the topics of the shows, which have includ-

ed rape, racism, body image, sexuality, the landscape of friendship, parental abuse, eating disorders, love, courage and fear, and death.

Staff members, using texts such as Paul Kivel's *Helping Teens Stop Violence*, Keith Johnstone's *Impro*, and Kristen Lirkater's *Freeing the Natural Voice*, help shape the tensions into performance. "We focus on a handful of issues, mainly the violence they have experienced in their world," Paul says. "In creating the show, they learn the resolutions they've posed to the conflicts."

Paul believes that "every single one of them has the capacity to solve all the problems they face, put the pieces together, and shine. And then go beyond that and teach others to shine as well. They just need the opportunity. And they need to own it.

"One of our kids was kicked out of school, couldn't get a job. After City at Peace, he went to an open audition and spent more than three years at a dance company, just out of sheer will and talent. We had one girl who was a runaway from home, and now she works for a law firm.

"These kids tour with the show, volunteer, and still maintain their inherent sense of optimism and hope. The smartest thing I ever did was listen to them." —EP

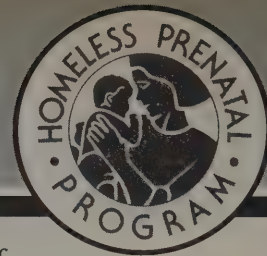
City at Peace/National
315 W. 23rd Street, #2D
New York, NY 10011
212/647-0663, www.cityatpeace.org

City at Peace
1328 Florida Avenue NW
Washington, DC 20009
202/319-2200

City at Peace HBO Special (video)

cabinfilms@mindspring.com, 301/320-0120
Emotional firsthand accounts of the City at Peace experience, through the personal stories of some of the kids. Covers the first six months of the meeting-and-creating process, not so much the actual touring of the show. —EP

Special Recognition Awards



Homeless Prenatal Program

The Homeless Prenatal Program (HPP) is the brainchild of former relief worker Martha Ryan. She was training health workers in refugee camps in Africa to do outreach in order to prevent epidemics. "I had always imagined that my working life would be spent in the Third World," recalls Ms Ryan. But upon her return to the United States, "I found the Third World right here in San Francisco."

In 1989, while obtaining her master's degree in public health at UC Berkeley, she started volunteering at a shelter for homeless people. She saw the unmet needs of homeless pregnant women, and decided to start the Homeless Prenatal Program.

She modeled the program after the work she had done in Africa, using former clients to do outreach to homeless and poor families. At its start, the program's part-time staff of three served seventy-two families. Today more than 1,500 families participate, with twenty-four staff members (two-thirds of whom are former clients). This model—of using peers as outreach workers—is used in many developing countries, for programs from STD/HIV prevention clinics for sex workers to tuberculosis control efforts among survivors of industrial accidents.

Volunteers offer a lot of support to the program. They provide childcare to children of homeless pregnant

women and serve as labor coaches. Some volunteers transport clients to their medical and social service appointments. Volunteers coordinate a yearly fund-raising dance party with a silent auction; they raised almost \$70,000 last year.

HPP runs six projects from an office space in the Tenderloin district of downtown San Francisco. The Prenatal Services Project increases the chances for homeless mothers to give birth to healthy babies and

decreases the incidences of abuse and neglect. HPP offers home visits for new and expectant mothers and workshops on prenatal care, child growth and development, and parenting skills. Ninety percent of the babies born to HPP's clients have been of normal birth weight and 93 percent have been born drug-free.

The two-year-old Housing Assistance Program, coordinated by Vivian Harris, has already helped hundreds of women find permanent housing. It is funded by the San Francisco Department of Human Services. The weekly housing clinic distributes listings and information.

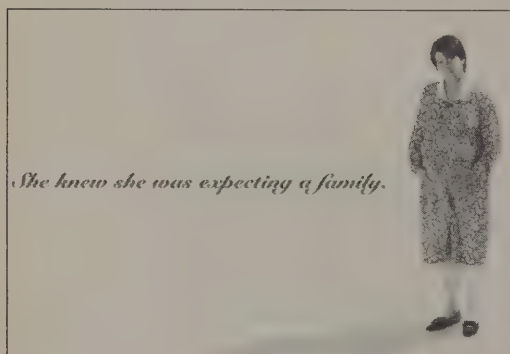
HPP has social workers and case managers on staff to help women address their short- and long-term needs for shelter, prenatal exams, domestic violence counseling, substance abuse programs, and job training. Case management coordinator Viviana Matrinez says, "I try to work with clients to help them realize that the same way that they came to this point of crisis, they can use that force to move in the opposite direction toward stability." Carla Roberts provides pre-treatment counseling and support, and motivates pregnant and parenting mothers with substance abuse problems to enter treatment programs.

Women who were formerly homeless and pregnant can participate in a fifteen-month Community Health Worker Training Program that prepares them for formal employment as health workers. They learn to assess clients, facilitate support groups, advocate for clients, and refer them to appropriate programs. Currently the program emphasizes outreach, office skills, and policy advocacy. These women seek out homeless families throughout the city and county jails. The program also teaches staff and clients how to make recommendations to local and state government officials to assist families.

Ramona Benson, former supervisor of the Community Health Worker training, had been a mother addicted to crack at the inception of the Homeless Prenatal Program. She was told that if she went into recovery and found stable housing she could begin training as a community health worker. "In 1990, I thought I'd work for Martha (Ryan) for a couple years," she recalls, "then get a real job." Instead, she stayed ten years. In 1998 The San Francisco Foundation awarded her the Resourceful Women International Award for her work with this program. "As we move into the millennium," Ramona says, "things look more hopeful toward empowering women to move from dependency to self-sufficiency." —Jayshree Chander

Homeless Prenatal Program

995 Market Street, Suite 1010 San Francisco, CA 94103 415/546-6756



HOMELESS PRENATAL PROGRAM

Camp AVARY

Camp AVARY (Alternative Ventures for At Risk Youth) is a one- to-two-week-long adventure for Bay Area children between the ages of eight and twelve, at least one of whose parents is incarcerated or has been in and out of jail or prison.

Danny Rifkin, the camp's director, had been director of the Rex Foundation, the philanthropic arm of the Grateful Dead. "After Jerry [Garcia] died, I was really looking for something to do," says Rifkin, "Earl [Smith, a chaplain at San Quentin] said that there is a completely unserved population of children whose parents are in prison. He wanted to develop a program to give them the support, guidance, and joy that is often absent from their lives. I knew this was definitely something I could do." Rifkin had been counselor and mentor ("child enrichment worker" in the lingo) at Wavy Gravy's Camp Winnarainbow.

Almost two million minors across the country have incarcerated parents, and the numbers are increasing. The lack of parental care, usually coupled with deep poverty, fosters childhood trauma and inadequate care.

"We want to provide a consistent, caring community for these children that's not going to change," says Rifkin. "The focus isn't necessarily on the parents. We want to have fun with a safe, loving environment for the campers. That's what we're about."

For the past three years camp AVARY has been bringing kids out of the horror show and into sunshine, laughter, music, writing, theater and dance, martial arts and yoga, environmental education, swimming, and quiet times; lots of stream walks and nature hikes to help children feel more comfortable outside.

Anger is not uncommon among the children of the jailed. George [not his real name] couldn't be controlled, and his explosive bursts kept him out of camp activities—until he met Colin, a youngster with Down's Syndrome who was also head dishwasher at AVARY. A friendship blossomed.

Says Rifkin, "Where George would usually be withdrawn and keep a scowl on his face, he would smile and be creative when he was around our head dishwasher.



Ben, Colin, and Triniti sharing dish washing "privileges" at Camp AVARY.

Colin's complete acceptance and his absence of prejudice or violence provided George with a sense of safety that he relished. He began helping with the dishes. We could see that having a sense of responsibility was truly rewarding."

Other campers took notice and soon everybody began fighting for the "opportunity" to wash dishes, until it became a coveted position.

Follow-through is Key

The campers are found through a variety of government social service agencies. Just over thirty children per week attend Camp AVARY, but the fun doesn't end when the summer's over. Once a month for the rest of the year campers can participate in Adventure Days—educational excursions to theaters, museums, and parks in the Bay Area.

"Believe me, the parents love us," says Rifkin. "They know their kids are safe and come home mellowed out."

A major goal is to cement long-term friendships between campers, so that they have a peer-based support group, no matter the turbulent nature of their parenting in rotating foster homes, orphanages, or pieced-together households. Rifkin cites experiences such as Colin's and George's as examples of the camp's success.

"The idea is that in ten years the staff should all be alumni," says Rifkin. "In a few years this will all be turned over to them." —EP

Project AVARY

1016 Lincoln Avenue
San Rafael, CA 94901
415/460-1184

ALL SPECIES PROJECT

by Chris Wells

All Species Project is one of the most innovative ecocultural arts programs going, and certainly one of the most effective; it brings a dynamic sense of wonder back into our kids' classrooms, even as it grounds and revitalizes our communities. Without such place-based, celebratory practices—without such collective forms for listening to, and honoring, the myriad animals and plants with whom our lives are entangled—all our scientific savvy and exhaustive species surveys will still be unable to save what's left. —David Abram, author of *The Spell of the Sensuous: Perception and Language in a More-than-Human World*



All Species Projects (ASP) exist in cities and villages in five states of the US, and in Ecuador, Chile, Argentina, Sweden, and India. Though known mostly for producing festivals of “ecosensible” learning, the projects are really about interdisciplinary community education.

Over our twenty-two-year history, we've developed a tried-and-true formula: Collaborate with local organizations working in ecology, education, and the arts. Choose a pressing ecological and poetic theme, such as “Animals Who Build: Design with Nature,” “Holding Up the Sky,” or “As Long As This River Shall Run.” Create a bioregional curriculum, leading to a large culminating event.

The event might look like this: a multicultural dedication ceremony, proclamations by local organizations or government groups, dance, poetry, species-naming chants. And much more: a parade developing the theme, a pageant theater (directly involving hundreds of people for an audience of thousands), accompanied by displays, sideshows, performance installations, and Chautauqua-like teaching about local environmental issues.

The important thing is that the creation of this short event should take a long time and be an in-depth exploration, weaving neighborhood groups and skills together. We borrow a large empty building from a municipality, church, or factory for at

least a four-month residency, in which the troupe creates an ecosensible skills/cultural arts studio that is open to the public every afternoon, evening, and weekend ahead of the culminating event.

In our public studio hundreds of people a week engage in science and arts activities with a troupe of ten or twelve gregarious teachers/aids. Together, they create the displays, costumes, masks, dances, skits, installations, etc., that will be part of the event. But to do this, they must also practice the teaching/learning required to immerse themselves in the event's theme or to “become” the species they will portray in a pageant or parade. ASP also offers its services to local schools (usually twenty or twenty-five, but as many as 200).

We continually ask, “What kinds of experience, pedagogy, ambience, and teachers inspire students to explore and learn the specifics of living in symbiotic relationships within our bioregions? What skills fulfill our intentions to Replenish, Redesign, and Remember our Earthly connections (ASP's version of the 3 Rs)?”

Most of these skills are missing from modern education, but they are necessary for becoming resourceful, contributing citizens. We've identified six broad areas: nature observation; systems ecology; multicultural story and myth; habitat sustenance and design/permaculture; health practices; arts and artisanry.

ASP projects can have long-last-

ing results. In Santa Fe, New Mexico local foresters were moving to clear-cut a cathedral of a forest on Elk Mountain. After examining and debating the topic in the local schools, an ASP studio team created a giant puppet play called the “Elk Mountain Controversy,” which was seen by several thousand people. As a result, Elk Mountain became such a household word in the town that the forest cutting was stopped.

In Ecuador in 1994, ASP collaborated with the Indigenous Federation Pincharimui and Permacultura America Latina. Agriculturalists researched the ancient terrace garden system and looked at the biodiversity that existed in the forest before the practice of burning the highlands. The art team found the mountain myths and Andean religious philosophy of the *Pacha Mama* (Earth Mother—literally “soul-force mother”). Local children made masks and larger-than-life puppets of local and endangered species. Out of this complex process, a curriculum for the schools emerged. It is still in use and still evolving.

In Chile in 1997, ASP partnered with the Lahuen Foundation, which is creating reserves for the most ancient of South American trees, the *Auracaria*. Rural and town students started mapping the areas between town and forest. Children and adults visited a nearby *Auracaria* forest for the first time in their lives. There they learned tracking exercises and

Chris Wells is founder of the All Species Project (ASP). ASP became confused with All Species Foundation (ALL), which was described in *Whole Earth*, Fall 2000 (their URLs are very similar). ASP (community education and theater) and ALL (global science) are complementary endeavors. Having helped start both, I can only say: good folks think alike. —PW



Kids in Santa Fe practicing to be stilt birds. Says Chris Wells, "We call stilts our 'best tool for higher education.' They are the fastest, most wholesome, and least expensive way to get youths from 8 to 18 to show up off the street. They are fantastic for

developing physical confidence and an instant sense of empowerment. Once you make friends by sharing this much fun you can talk about more serious issues."

games for finding and observing birds, along with permaculture games to help improve the production and biodiversity of their land.

ASP works as animators, to draw out the relevant ecological story from the community while adding inspiration, skills, and solutions. Our organizational goal is neither just to produce an event nor to create a huge infrastructure, but to seed community learning processes.

If we are ever to buck the trend of devaluing our own bioregions and those of others (our resource bases), it will be to the degree we plant the ecosensible skills that guide ASP. We must find ways to Remember, Redesign, and Replenish our way into the future.

MARTY KRAFT



The All Species Project of Kansas City, Missouri chose "Discover Turtle Island" as its 1992 theme, in honor of the Six Nations name for North America. This sculpture was created out of recyclable materials brought by the Kansas City community.

All Species Project

5644 Charlotte Street
 Kansas City, MO 64110
 816/361-1230
www.allspecies.org

The Hawk That Wouldn't Migrate

Waldo, the Red-tail, prefers million-dollar Marin County neighborhoods.

by Elizabeth Rouan

For longer than anybody knows, the southern tip of Marin County has been home to one of the largest concentrations of birds of prey in western North America. Tens of thousands of hawks, kites, falcons, eagles, osprey, vultures, and harriers appear in the skies over the Golden Gate from August through December. Since the early 1980s, community volunteers of the Golden Gate Raptor Observatory (GGRO) have been studying and monitoring the fall raptor migration, using ground counts, banding, and radio-tracking techniques. —Allen Fish [Suggested by Ryan Phelan.]

We all wonder where these hawks come from—is it way up north? Oregon, Washington, or Canada? How far have they traveled? What ordeals have they survived? In our 1998 season, the GGRO telemetrists chased Waldo, the first adult Red-tailed hawk we've ever tracked, and were stunned to find that the hawk was going...back where it came from!

GGRO trackers released Waldo on October 19. Waldo weighed almost three pounds and, being big, was probably a female, although with Red-tails you can never be certain. Waldo was also in heavy molt and looking rather sloppy. About six primary feathers were missing from the wings, along with a few feathers from the tail.

After releasing Waldo, the telemetrists hoped for the high-soaring, fast-flying, long-distance migration of our wild imaginations. But Waldo flew only eleven miles in two weeks—all within Marin County. The movements were so limited that

the trackers actually saw Waldo many times. Some of those observations lasted hours.

On the first night, the trackers found Waldo roosting at the Waldo Tunnel on Highway 101, just half a mile from her release site. On the second night, Waldo roosted in Sausalito, about one-and-a-half miles from the tunnel. On the third night, Waldo traveled seven miles north to Larkspur, then stayed in the general Larkspur area for the next six days.

One day, the team walked up and down busy Magnolia Avenue in Larkspur, as the hawk merely perch-hopped all morning. Waldo perched on the roof of one house for nearly an hour. She preened, stretched her wings, flexed her tail, and just sat there, looking around. When she jumped off the roof, she initially sank in the air, due to her tremendous weight. But she lifted herself with heavy flaps, to perch in one of the many tall trees along the street. At the new perch, she proceeded to get comfortable, preen, and look around for another hour or so. For an entire day, the telemetrists observed Waldo hopping from perch to perch.

That night, Waldo was in a redwood tree in the landscaping of a Chevron station. The trackers dined at a restaurant across the street. A tracker kept tabs on her from the restaurant window all through dinner.

On the ninth day, the trackers were very bored, itching for a real hectic chase to, oh...Santa Cruz? Suddenly, Waldo soared so high and long that all we saw was one of those dots in the sky that hawkwatchers call an "unidentified raptor." Waldo was a mere flake of black pepper against a light blue cloud-streaked



Volunteer JD Durst with Waldo before her release.

MARION WEEKS

sky. Was she finally ready to move?

But she only flew to Kentfield, a mile north. She settled into an area thick with trees, well-shaded, and cool, with lushly riparian ravines. It appeared to be a high-income community with million-dollar homes. Ongoing construction was occurring. We theorized that Waldo might like the noisy construction, since the clearing and digging would flush out rodents to eat.

On November 2, two weeks after Waldo's release, she flew another mile north to Ross, and settled in another quiet neighborhood. While tracking her there, the team met a man who claimed that his wife had been routinely feeding chicken parts to Waldo since 1981. The trackers were invited into their backyard. There stood Waldo on the lawn, tearing at a chicken gizzard the man had provided. The stupefied telemetrists stood back, gaping. Never in our craziest dreams did we expect to find a hawk eating chicken parts!

For this study, at least, we found out not only where the bird went, but

This article originally appeared in slightly different form in the Winter 1999 *Pacific Raptor Report*, the newsletter of the Golden Gate Raptor Observatory (see access, page 94). Reprinted with permission.

also where it came from. "Home" for Waldo is a riparian zone in a residential part of Ross in Marin County; a watchful woman providing chicken for food; a human neighborhood, rich in prey, green with trees, the hillside speckled with expensive houses. It is noisy with human activity. And it's been home for Waldo

since at least 1981.

The Marin Headlands, on the other hand, may be a vacation spot for Waldo, perhaps for an annual family reunion or a yearly pilgrimage. This 1998 telemetry study clearly demonstrated how much we don't know about hawks. Perhaps that's why GGRO volunteers come back,

year after year. We want to know more about the lives of these hawks because we keep learning such truly amazing things.

Libby Rouan is a hazardous materials specialist for San Mateo County. She has hawkwatched and radio-tracked for GGRO for ten years.

"She Taps on the Roof; She Does a Little Dance"

A Conversation with Waldo's Feeder
by Allen Fish

The first frost of the season had fallen the night before. We sat in Mrs. Buteo's kitchen at a small round table. (She isn't Mrs. Buteo. She would like to remain anonymous.) Corner windows opened up to the backyard patio and to a creek bed. I could just make out the cars speeding by on a busy thoroughfare beyond a screen of trees. Among the many paintings and wall-mounted images was a sign, "If I Rest, I Rust." Outside, about thirty feet from the kitchen door was a big, buff-colored adult Red-tailed hawk sitting in a deciduous oak. The hawk's head occasionally turned to the side to examine things, but she mostly faced us.

Allen Fish: How did all this start?

Mrs. Buteo: My kids saw the hawk in a tree after a storm. They asked me if they could put food out for it. The hawk moved to an aerial on the roof, so we put a pie pan with chicken livers in the lane, which probably wasn't the best thing, so we later moved the food to the backyard on the patio table. She skidded across the table the first time she came down, so later we moved the food to the lawn [laughs]. She's been a great teacher to me.

AF: How do you mean?

Mrs. B.: Well, she mates for life, but she leads an independent life. They share duties for raising the

young, and when the babies are ready to go, she drives them off. That was a big help to me in letting go of my kids.

She's an ideal pet. I don't have to clean up her cage or get anybody to take care of her when I go on a trip. I don't really like to have animals in cages. A friend of mine said, "You have her so well trained." I said, "No; she has me well trained."

AF: How long have you been feeding this hawk?

Mrs. B.: I think about twenty years. She will disappear for weeks at a time, particularly in the fall. I always told people that she goes down to the Marin Headlands to schmooze with all the migrating hawks.

AF: You were right. She did. That's where we banded her. What do you feed her?

Mrs. B.: At first I gave her almost exclusively gizzards, but then I realized that she needed calcium, so I started buying chicken necks and backs at Living Foods Market. And wingtips. They just throw all that away.

She won't eat fish, or raw beef, or cooked food. Friends of mine complain, "You give her RAW meat?!!" I have to remind them, she doesn't cook her food; neither should I.

AF: Did you tell the store what you wanted the chicken parts for?

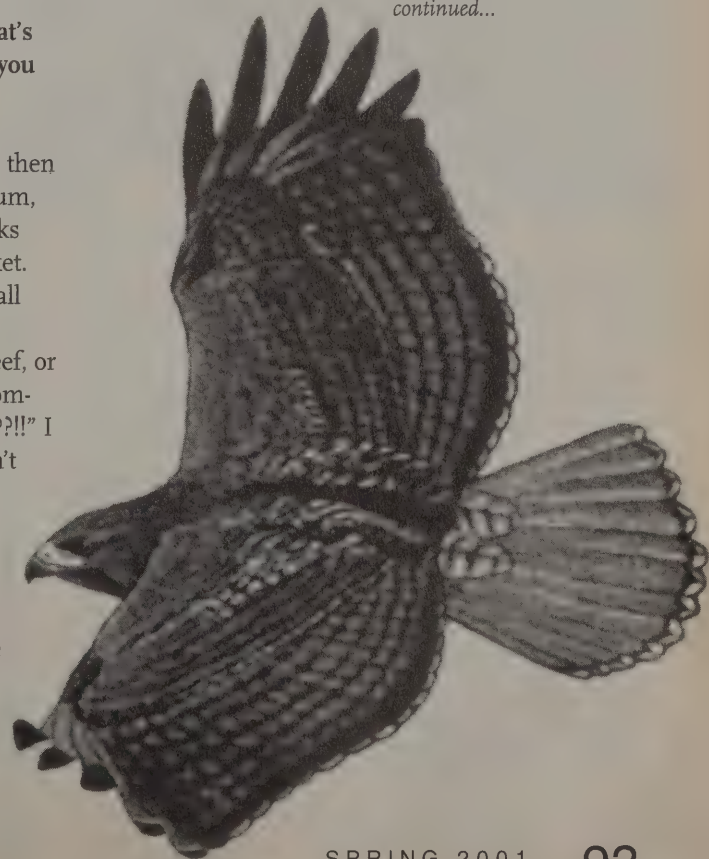
Mrs. B.: I'd say, "Well I have to feed my hawk" [laughs]. I've learned not to say "my bird." They wouldn't know what to think.

She gets pretty heavy when she eats and can't always make the roof [about 8 feet high]. Sometimes she'll just sit on the back of the patio chair for a half-hour or so. Then when she does fly, the force of her wings pushes the chair over backward.

AF: How close do you get to her?

Mrs. B.: Oh, she'll be at my feet when she's eating. I've longed to touch her, you know, to stroke her head, but it wouldn't be right. She once raked my head with her talons; I had to get the wound cleaned and a tetanus shot. But I don't think she meant to do that. She was heading for the food and I got in the way. She's very fast, I learned, and very heavy. I was stunned by that.

continued...





Waldo's the blur at the back of this snapshot. Trust us.

AF: So how do you know when she's hungry?

Mrs. B.: She taps on the roof, and if I don't pay attention, she does a little dance. She'll run across the roof. Sometimes she'll come down to the patio and peer into the kitchen to see if I'm there. If she can't find me, she'll go look in the bedroom window. Then she'll jump up on the camellia and stare into the living room.

AF: Do you think she gets food anywhere else?

Mrs. B.: She's obviously hunting elsewhere. I once saw her take a bird in flight and eat it. And I once saw a rat's tail coming out of her beak. She's certainly staying healthy when she disappears in the autumn.

AF: Does she feed at the same time of day? Or more than once a day?

Mrs. B.: Ordinarily she feeds once a day, usually in the morning, but she fed late in the day for a while. When she has babies she may come down eight times a day.

AF: How long has she been breeding here?

Mrs. B.: She's had babies every single year, for at least fifteen. I think she feels safe here. She usually has two; one year she had three. They are so noisy; they start yelling at five o'clock in the morning. When she had the three, it was very sad because

that little one just cried and cried and his voice just got weaker and weaker.

AF: How long do the babies stay around the house?

Mrs. B.: It's hard to say. They don't fly very well. Maybe two to six weeks.

AF: Do the young hawks ever come down to eat off the lawn?

Mrs. B.: For the last five or six years, she would entice the babies down. Once I saw her use her beak to pick up a chicken piece on the grass, then she moved it to her talon. Then back to her beak, then talon, then back and forth. Finally the young ones came down and tried to snatch the food from their mother. She knew. She was playing with them.

Once she grabbed a baby by the tail and dragged it backward across the lawn while it was screaming.

AF: To teach it how to eat?

Mrs. B.: No; to show it who was boss. It was trying to eat too much of her food.

I think she loses her feathers after the babies leave, about August. Once, a Native American man at Kule Loklo said they needed raptor feathers for their ceremonies, so the next time I fed her, I said "If you can spare a

feather, a man I met could use it for his ceremony." A half-hour later, one of my neighbors rang the doorbell. She said, "Here, I found this in your yard." It was one of her tail feathers!

AF: Do other animals interact with her?

Mrs. B.: The jays and robins attack her sometimes when she's perching. They actually hit her head and pull feathers off sometimes. But she doesn't budge. Once the cat tried to walk up on her from behind while she was feeding on the lawn, but the cat didn't know how good her peripheral vision was. She just spun around and held her wings out. The cat ran off.

AF: What do you call her?

Mrs. B.: I've never given her a name. I don't think it would be right. She's not a human.

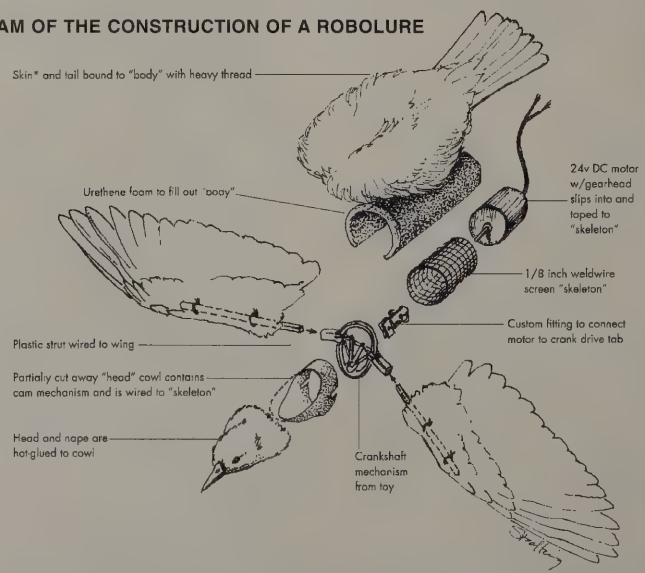
Allen Fish is the director of the Golden Gate Raptor Observatory.

Golden Gate Raptor Observatory

Donors of \$25 or more receive *Pacific Raptor Report* and an annual season summary. Bldg 201, Ft. Mason, San Francisco, CA 94123 415/331-0730, www.ggro.org

GGRO is a project of the Golden Gate National Parks Association in cooperation with the National Park Service. Call or see the Web site for information on volunteer and internship opportunities, including banding, Hawkwatch, docent, and telemetry programs.

DIAGRAM OF THE CONSTRUCTION OF A ROBOLURE



"RoboLures" are alternatives to using live animals to attract raptors for banding. Skins for the lures are obtained from road-killed and window-killed birds.

Excerpted with permission from the Winter 1999 *Pacific Raptor Report*.

DRAWING BY ERIC STOELTING

Announcing the Margaret Mead 2001 Awards recognizing community creativity for a new century

from the Margaret Mead Centennial Committee, Institute of Intercultural Studies, and *Whole Earth*

"Never doubt that a small group of thoughtful, committed citizens can change the world."

— Margaret Mead

When Margaret Mead died in 1978, she was the most famous anthropologist in the world. In her honor, having started in 1999 and continuing through the centennial year of her birth in 2001, *Whole Earth* and Margaret Mead's foundation, the Institute of Intercultural Studies, come together to honor small groups of thoughtful, committed citizens who have changed the world.

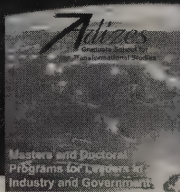


Mead always believed in the human capacity to change, insisting that the cultural habits of racism, warfare, and environmental exploitation are learned. She promoted human diversity as a teaching tool; pointed to modified traditions and new institutions that had successfully adapted to a changing world; and praised groups who were inspirations, models, and vehicles for learning from one another. Her goal was nothing less than intercultural and international understanding as a foundation for human freedoms.

If you know of a small group (fewer than 100 people) anywhere on the planet that has worked to change the world; that has cross-connected issues such as race, environment, intergenerational learning, child rearing, and gender understanding; that has developed an organization or series of tools that others can learn from; and that takes a long view of cultural understanding, please send your nominations to:

Mead 2001 Awards PO Box 3223 Peterborough, NH 03458 or nominate@mead2001.org

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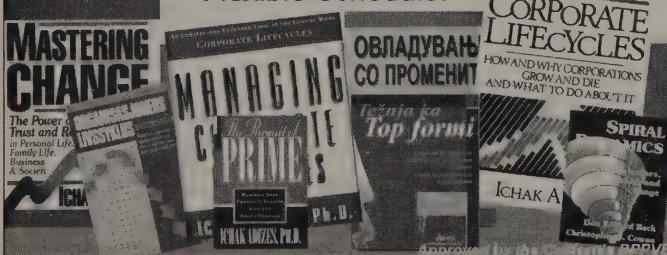


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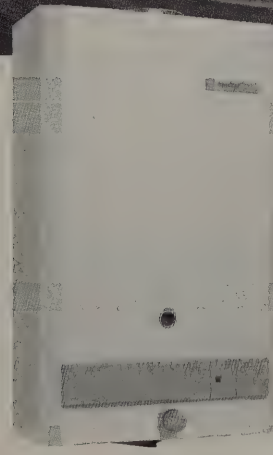
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Gossip

Sorry the issue is definitely late. The delay was the regular money dance. We don't start producing an issue until we know we have the money in sight to finish and print it. Usually we have the money for the next issue about the time we finish the previous one. This time we hit a gap.

Readers' generous feedback to our end-of-year appeal (see page 100!) yielded an astounding \$20,000. No one anticipated 228 individual gifts! Then came an additional \$10,000 from a single donor. We hit the "go" threshold around January 19 and restarted production.

In addition, John Larson has kindly underwritten 100 hours for a grant writer. And a timely grant from the

Marin Community Foundation is helping pay for parts of this and future issues. The summer issue is just about assured, and we'll try to get closer to our normal equinox and solstice schedule. Your gifts to keep *Whole Earth* alive are remarkable.

Shoestring budgets definitely exhaust the staff. We're still searching for a publisher who is aching to work to preserve this fragile enterprise, and loves circulation and newsstand problems. It's the old catch-22: A publisher candidate looks over the budget and says "Where's my salary?" and we tell him or her, "Have faith."

We could really use interns in the meantime (and at all times) who want to learn how a huge magazine (I mean it. Cut ads from others and they are half our size) is made by so few

people. The upside is trying everything. Some of the work's tedious (we all do it) and some is fun, especially with spring, magnolias, deer outside the window, and Devon's drag performances (the woman's becoming famous; she was flown to New York to appear on *Maury Povich* and to Seattle to be a guest judge for a drag contest).

We won a merit award, in competition with nearly 8,000 others, from the Society of Publication Designers for our Spring 2000 spread on Antarctic ice flows (with donated photos by Stuart Klipper). It will be shown in the Big Apple and appear in *Publication Design Annual*.

Peter Flaxman guided legal work to regain our www.wholeearth.com URL from the defunct Whole Earth



Two Editors on amazon.com

Book Brawl: Act 6

Dear Peter,

I want to thank you again for the wonderful opportunity to guest edit this magazine. I think you did a favor to the readers by allowing me to trot out my current obsessions.

However, I think you did a disservice to the readers by stripping my reviews of their mention of Amazon.com. I included the tag "or Amazon" for any item I reviewed (if Amazon carried it) for the same reason the early *Catalogs* and *Review* carried the review tag of "or Whole Earth

Access" on most items. Whole Earth Access was a for-profit merchandiser not connected with the magazine in any way but by name, nor did the magazine receive any economic benefit from the mentions of the store. The entire intent of *CQ/WER* listing the Access company name after the publisher's information was to provide options to the reader. If you the reader had a bunch of things you wanted to order and you wanted to conserve your resources you could order them all from one source. Or if you didn't want to deal with very small-time outfits, who are often not the most reliable, you could order what you needed from a trusted source—Whole Earth Access. On the other hand, if you wanted to patronize the smaller outfits, you could order directly from the publisher, manufacturer, or supplier and avoid Whole Earth Access altogether. The important point is that the *Catalogs* gave you a choice. They listed the original source and the convenient source. I continued the same practice with Amazon. I wanted the reader to know the exact original source, and I wanted them to have a convenient source as well in case they wanted to gang a number of disparate items together to save shipping costs and resources. Amazon was not only the source that carried more items (they carried the videos,

music, and many tools as well as the books) but they were doubly convenient because of their superior online service. (There are legitimate reasons why someone might not want to use Amazon, but nobody can complain about their reliable and easy-to-use service. They are easily the best in the world.)

But when you unilaterally stripped all mentions of Amazon, Peter, you were stripping away options and information. It's a kind of unnecessary preaching. Instead of letting the reader decide whether they want to support the small publisher, or maximize efficiency and use the common carrier, you were deciding for them.

As an avid reader of *Whole Earth*, I am pro information and pro choice. I want to know how to get something from the originator, and I'd love to know how to get something conveniently, whether it's from K-Mart, Sears, or Amazon. If I knew that you knew I could get all the items easily from one source, but you weren't going to tell me because you objected to that source, I'd be pissed because you weren't letting me make that decision. I'm an adult. Tell me the issues, give me the choice, and let me decide. Most importantly, serve me, the reader.

Kevin Kelly

Guest editor, Winter issue

Access store (soon we'll have www.wholeearth.org too). We thank Peter for his competent and charitable efforts on our behalf.

Editorial board member Vijaya Nagarajan gave birth to twins in November; a remarkable feat since her water had broken months before the delivery date. This incredibly energetic woman was not allowed out of bed for more than twenty minutes a day! At four months, Uma and Viji don't just smile, they actually laugh; chuckles plus gurgles deep in tiny chests.

After the Fall 2000 issue calling for an all species inventory, the project is up and running. A recent dinner seating arrangement was a bit astonishing, with Stewart Brand, Kevin Kelly, me, and America's top botanist Peter Raven lined up in a

row. Stewart smiled and called it "The Dynasty." Peter Raven provided us with the first name of this magazine (*CoEvolution Quarterly*). For this issue, he kindly helped us find sources on resurrection ecology. A singular donation by Ev Slinger, world-renowned biologist on spiders and their parasites, will allow ALL (the foundation spearheading the inventory) to find a CEO; convene meetings on taxonomy, technology, and microbes; and network the "South" with the "North." It would be just amazing if the inventory of our one and only Ark joined the long history of cultural transformations kick-started in this mag. —PW



Devon, otherwise known as "Jake," as seen on the *Maury Povich Show*. The show was about drag kings. Audience members screamed when they found out "Jake" was really a woman. (Who knows what they would have done if they'd known she was also associate publisher of *Whole Earth*?)

Dear Kevin,

Whoa! You know I cherish your ability to stir up enthusiasm, your futuristic intelligence, and the time you generously spent as guest editor. But this is the magazine's fourth discussion of Amazon.com, and I'm surprised by your passion.

First, we did not "unilaterally strip all mentions of Amazon." We did our homework. We left Amazon.com when it was the best or the only source for a product. Page 58 on films on video reads: "All are fairly easily available...from the usual online sources like Amazon or eBay or for rent from Netflix...representative prices are mostly from Amazon."

We did strip Amazon.com from other references. It was just too obvious an option. It's like telling readers they can get cash from ATM machines or buy tofu in supermarkets. Perhaps you are still fighting battles for e-commerce, which has long since become mainstream. Times have changed. Our readers can't help but know Amazon.com (and many other sources), and they use each source when it's appropriate. We respect their intelligence. They don't need to be coaxed or rah-rahed, or hear the never-ending litany of it's fast, it's cheap (which it isn't), it's on tap.

Second, I find the analogy to Whole Earth Access difficult to accept. Our highest value is not one-stop, convenient shopping, nor info-access *isolated from other aspects of life*. Whole Earth Access Company is not comparable to Amazon.com. Our support of the Access Company combined info-access with a much richer texture which included empowering a small business, individual and independent entrepreneurs, and a geographically defined community. *Whole Earth* is also loved for giving readers info and stories about *unknown* products and *small* businesses. Whole Earth Access was local, unknown, and at the time it provided a unique service, not like Amazon which provides a marginally more convenient one. At its start, at least, the Access Company provided only the "best." Amazon.com will sell anything; quality is not a criterion.

This is not a criticism of Amazon. Amazon doesn't pretend to be, and is not, a richly layered and textured medium. It cannot offer coffeehouses, face-to-face human relations, local employment and reinvestment, very local books, or poetry readings, as found in local, brick-and-mortar bookstores. Amazon is no more a community than all the shoppers at Macy's form a community.

Amazon, chain bookstores, used bookstores, and independent stores serve different purposes. But they do compete for financial survival. Because they compete, we had to decide how much free exposure to give to one or the other. After many heartfelt letters from readers, we decided to navigate a middle path. So we didn't drop all references to Amazon, but we opted not to repeatedly cite it as a source for products easily available elsewhere.

We also switched our Web site link from Amazon to www.powells.com, an *independent* online bookseller. (Powells sends us a small percentage if the purchaser buys by clicking the review on www.wholeearth.com.) We decided to support not one value (well-publicized, convenient access) but *many* strands of the *Whole Earth* tradition. From my point of view, *Whole Earth* is not ideologically pro fast-info regardless of context. We are definitely pro info as an ingredient to be mixed with heart and common sense.

Peter

Whole Earth — The Defining Image?

The Whole Earth 'Lectronic Link (WELL) still exists <www.well.com>, and loyal readers still help us discuss our future. Here are some unedited postings from a topic started by Mike Gunderloy in the WELL's Whole Earth Conference.
—PW

Mike Gunderloy: In 1968, the defining image for WE was, literally, the Whole Earth as seen from space—an unusual, new, and deeply affecting sight.

Now many WELLperns have grown up never having known a time without images of the whole earth. It's old hat. It's familiar. It's invisible. It no longer tugs at the soul. So, what's the defining image for WER for the current era?

John H. Maurer: I dunno. Anyone have any good ideas?

Jon Lebkowsky: I'm tempted to say 'scorched earth.'

Perhaps the next-generation image will emerge from the Viridian Design Movement?

Mike Gunderloy: Somehow, switching from whole earth to scorched earth seems to me the equivalent of "All hope abandon, ye who enter here". Maybe a nice picture of the 9 levels of Hell?

But my take is that the defining image ought to be optimistic, whether we are optimistic about the current situation or not. Wasn't at least some of the point of the '68 picture that you COULD see the whole earth as a single system, even though most people didn't (and still don't)?

I'd love some image that showed mankind as part of the great chain of being from quarks to galaxy clusters...but I don't know what that image is.

John H. Maurer: Some of the images of galaxies from the Hubble are really beautiful.

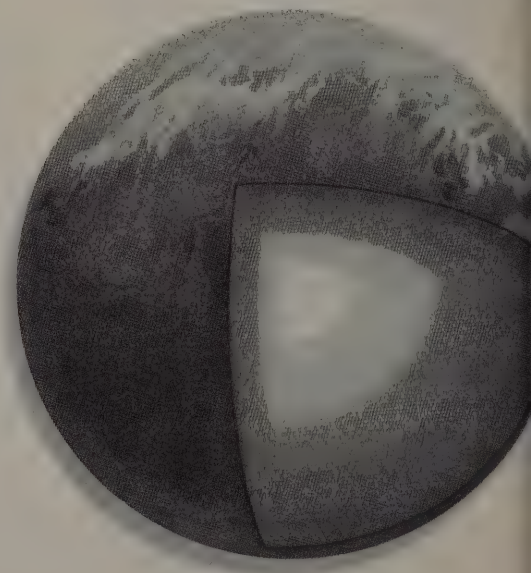
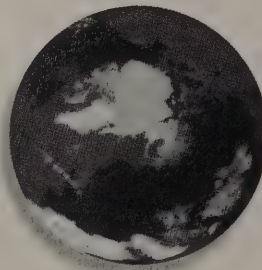
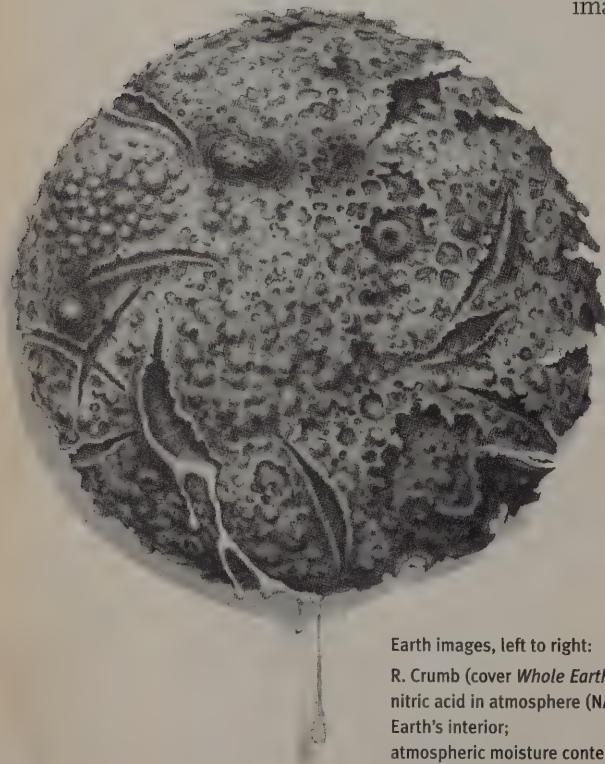
A picture of a galaxy as a metaphor for the universal scope of the concept? A baby always seems to me to represent hope & new beginnings. How about a picture of an infant?

Phillip Guddemi: There's nothing wrong with the Whole Earth. Really. This idea that people have to change their symbols to be "with the times" is nonsense. The point is to make the times. People still haven't seen the Earth as a total system yet? The Whole Earth is still the best symbol for that vision. Maybe it will be time to change it when the Clock of the Long Now has chimed fifteen times.

There is no other planet we know like it. It is the home of life. It represents both what we endanger and what we cannot endanger.

Let's keep the faith.

Jon Lebkowsky: That's a good point, Phillip. (And I apologize for the cynicism of the scorched earth remark...we do definitely need to come from a hopeful place...)



Earth images, left to right:
R. Crumb (cover *Whole Earth Review*, Summer 1993);
nitric acid in atmosphere (NASA);
Earth's interior;
atmospheric moisture content over Atlantic (ESA);
hands gripping Earth;
expanded ozone hole (NASA).

Mike Gunderloy: I disagree. 30+ years of culture change have changed the meaning of the whole earth symbol; it does not have the same magical resonance it did in 1968. I think we want to hang on to the *_idea_* of the whole earth, not to the *_picture_* of that idea_ that was appropriate in 1968.

The map is not the territory.

John Elemans: I'm with Phillip, this image needs no change. I recently pointed it out and discussed it with my daughter (11 y.o.). I think that it is perfect.

appropriate to other meanings.

"We" used it first, and "we" should defend it.

Mike Gunderloy: OK, then, perhaps a shift of discussion: what would YOU do to bring our meaning back to the whole earth, to imbue it with mystic oneness and all that jazz?

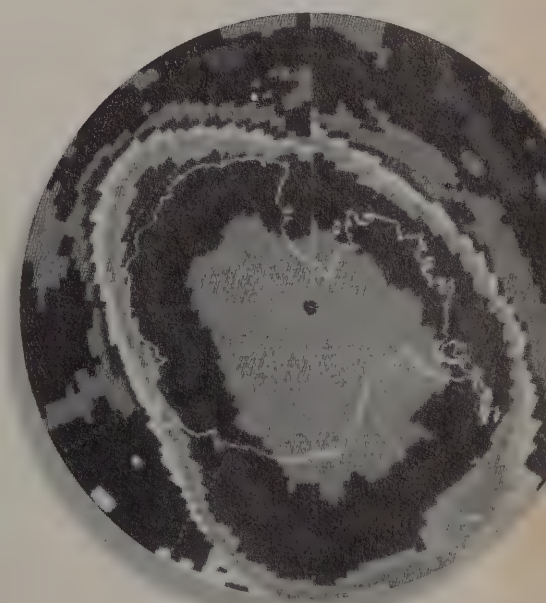
Jon Lebkowsky: Perhaps what we're looking for is an explosion of images...

John Payne: A hologram that shows a rotating Earth, to give a sense of its reality in space, might be good. Hologram decals aren't all that expensive, and could be applied after printing if need be.

I agree with the general call for more detail, above. That might be reflected in a similar shot done with high-resolution electronic imaging, so you could look at it with a magnifying glass and pick out familiar features.

On the Web site, there's all kinds of things you could do with this, but in a magazine format...

Maybe a new section printed on transparent overlays, all from the same perspective and in the same scale in any given issue, so you can view one or several of them stacked together.



Phillip Guddemi: The culture change is actually a reason to try to reappropriate the image. That is to say, I think there has been a tendency for globalizing business to use the Whole Earth as a symbol for worldwide enterprise. The reason for Whole Earth to maintain the image is therefore twofold: because it still can be used to recapture its original meanings, and to save the image itself from those who would appro-

Paul Bissex: Personally I would overlay it with all kinds of Edward R. Tufte-approved infographics conveying formerly invisible connections and ecographic information!

I would do that mentally, so as not to clutter up the image.

Because of my graphic design background I find I am thinking about this as a logo design problem. What is the identity of the Whole Earth organization and how can it be represented in uncluttered graphical form?

A thought provoking topic in any case.

ISSUE 104 THANKS

We are grateful to the following people for editorial, art, and business assistance with this issue.

Point Development

Stewart Brand (ALL)
Larry Brilliant (Softnet)
Bob Fuller (InterNews)
Alex Gault (Edunomics)
Mike Groza (Marin Community Foundation)
Elliott Levin (Partnership Resources Group)
John Larson (Presidio Advisory Services)
Jerry Michalski (Author)
Ryan Phelan (ALL)
Will Rosenswieg (H & Q Winery)
John Sheehy (Magazine development consultant)
Sallyanne Wilson (Marin Community Foundation)

Restoration

Tom Barnes (University of Kentucky)
Joy Buslass
Dave Egan (*Ecological Restoration*)
Bill Everett (Topozone.com)
Steve Gatewood (Wildlands Project)
Michael Giacomini (Root Jack)
Kevin Kelly (ALL)
Lina Miller (*Wild Earth*)
Scott Miller (Smithsonian Institution)
Nana Naisbitt (Writer)
Bret Rapaport
Peter Raven (Missouri Botanical Garden)
Irene Reti (UC Santa Cruz)
Paul Stamets (*Fungi Perfecti*)
Margaret Walsh (U of Wisconsin Press)
Jan Whitney (*Prairie Plains Journal*)

STRAW

Jennifer Allen (Southern Sonoma County Resource Conservation District)
Zenobia Barlow (Center for Ecoliteracy)
Fritjof Capra (Center for

Ecoliteracy)
Chris Chu (STRAW)
Grant Davis (The Bay Institute)
Marilee Eckert (Marin Conservation Corps)
Denise Fisher (Prunuske Chatham, Inc.)
Ruth Hicks (The Bay Institute)
Delia Hitz (The Bay Institute)
Jerry Kay (Science Interchange)
Liz Lewis (Marin County Stormwater Pollution Prevention Program)
Paul Martin (Rancher)
Aaron Mihaly (Student)
Shiela Molyneaux (School Environmental Education Docents)
Sandy Neumann (Center for Ecoliteracy)
John Parodi (STRAW)
Melissa Pitkin (Point Reyes Bird Observatory)
Al Poncia (Rancher)
Liza Prunuske (Prunuske Chatham, Inc.)
Michele Rodriguez (Marin County Planning Dept.)
Laurette Rogers (STRAW)
Richard Rogers (Sonoma County Permit and Resources Management Dept.)
Sandy Scoggin (Point Reyes Bird Observatory)
Nancy Scolari (Marin Resource Conservation District)
Sandy Wallenstein (Environmental Education Council of Marin)
Molly Whiteley (Lagunitas School)

Miscellaneous

Vickisa Feinberg (Firefighter)
Marty Kraft (All Species Project)
Geoff Millar (*Sing Out!*)
Mary Ann Lynch (<http://landscaping.about.com/>)
Nancy Murphy (Global Business Network)
Irwin Silber (Folk music maven)

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Thanks, thanks, and more thanks to all who donated to *Whole Earth* from November through February (donors since February will be thanked in the next issue).

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Published: 4/yr.
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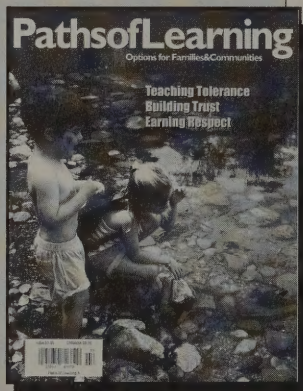
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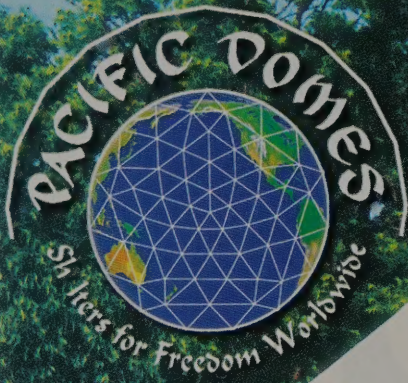
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